

START

#1 Guide To Atari ST

Volume 5, Number 1 August 1990 USA \$14.95 • Canada \$19.95

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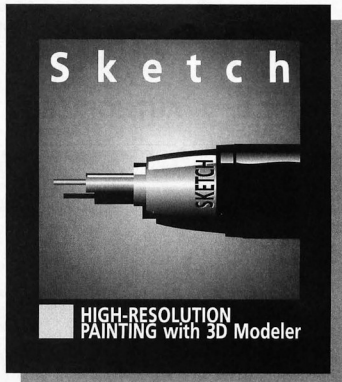
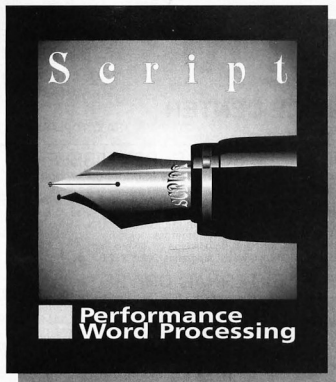
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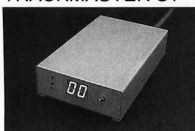
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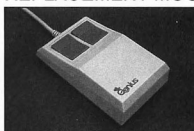
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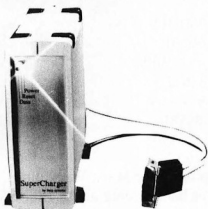
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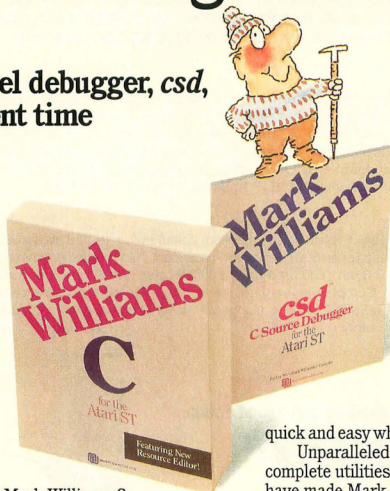
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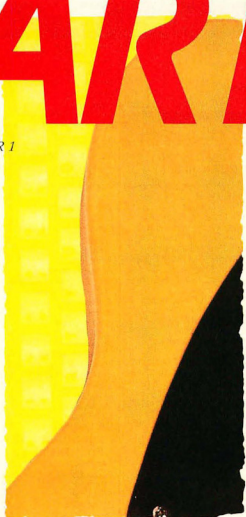
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AUGUST 1990

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START Magazine is produced on an Atari Mega 4 running ISD Marketing's Calamus. Our service bureau for Linotronic output is Omnicomp of San Francisco.

General Offices, Catalog Customer Service: (415) 957-0886, 8 a.m. to 4 p.m. Pacific Time. START, 544 Second Street, San Francisco, CA 94107. Credit Card Subscriptions and Catalog Orders: (800) 234-7001. Subscription Customer Service: For change of address and inquiries, include subscription labels and write to START Subscriptions, P.O. Box 535, Mt. Morris, IL 61054, or call (815) 734-6309, Monday through Friday, 7:30 a.m. to 10:30 p.m. Central Time.

August 1990, Volume 5, Number 1. START Magazine (ISSN #0889-6216), is published monthly by Antic Publishing, Inc., 544 Second Street, San Francisco, CA 94107. Third-Class postage paid at Columbia, MD. Subscriptions (for 12 issues with disk): \$79.95 in U.S.; California \$85.35; Canada \$97.95; Foreign surface \$104.95; Foreign airmail \$158.35. Foreign subscribers (not including Canada) must send full payment. Payment in U.S. funds only. POSTMASTER: Please send address changes to START Magazine, P.O. Box 535, Mt. Morris, IL 61054.

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Editorial

PIRACY HURTS US ALL

In the past several months, Atari-specific trade shows, particularly World of Atari in Anaheim, Calif., and the PACE show in Pittsburgh, Pa., have received a lot of bad press. Not only did both shows attract smaller-than-expected crowds, but some heavy software pirating ruined the shows for many vendors.

Trade shows are a traditional spot for companies to show off their latest releases and these two shows were no exception. But something went wrong. At World of Atari, for instance, Codehead was there to hawk the latest versions of Maxifile and Hotwire. On the second day of the show, both programs had managed to find their way to a local pirate board.

At the PACE show, things really got out of hand. MichTron was there to sell a new paint program for the STE called Canvas — so new, in fact, that it hadn't yet made it to dealers. According to George Miller of MichTron, on the second day of the show someone returned the program to him *unopened* and demanded his money back, because, he claimed, "My buddy got it off a bulletin board, and I'll just get it there." To add insult to injury, the gentleman told Miller he felt he was being "ripped off" by MichTron.

Every machine format experiences piracy, but it's even worse in a market as small as the ST's because the losses can't be absorbed as easily. Quite simply, when someone copies and freely distributes a commercial program, they're committing a crime — copyright laws are very clear in this respect.

The legitimate buyer — and that's the vast majority of users — must be aware that piracy is a problem. The ST community needs the talents of its programmers to maintain a thriving market. It's unfortunate that pirating rather than poor sales may be the force that drives them to other markets.

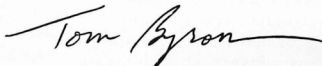


The IAAD

One thing the Atari developers have done to combat piracy is to form the Independent Association of Atari Developers. The IAAD is not affiliated with Atari Corp. and membership is open to any registered developer. The IAAD is also a great place for developers to trade program ideas and marketing strategies. To join, log onto Genie and type PERMIT'S.

Reader Survey Results

Initial response to the reader survey in the May 1990 issue has been astounding. Many thanks to those who took the time to fill it out — you're giving us the best proof that you take your reading seriously. We'll publish the results in the October 1990 issue.



TOM BYRON
START Editor

Dialog Box

SHAREWARE

To All Atari User Groups: As we are all aware, there currently exists a wealth of superb programs for our favorite machines available under the concept of shareware. Many of these programs are truly of commercial quality and offer outstanding value for the minimal contribution requested by their authors.

Equally obvious, however, is the fact that not every user of such software will make that small donation. Therefore, in an effort to provide encouragement to shareware programmers to continue supporting the Atari user community, ACE of New South Wales, in Sydney, Australia, has initiated a "Shareware Author of the Month" program.

Under this scheme, we select one shareware programmer each month to whom we will make a small donation. This is not intended to register each of our members as official users of the software but rather serve as a simple "thank you" for a job well done. We will continue to encourage our members to individually register with the authors of shareware programs they frequently use.

We are challenging all other computer user groups to follow our example. The proposed monthly donation may be as much as your organization deems appropriate or can afford, but we suggest the minimal amount be whatever the shareware author requests from each user. It is equally important to send a letter of congratulations to each "winner" thanking them for their efforts and encouraging them to continue. It is our hope that this scheme meets with success to ensure that shareware remains a viable

concept.

If each user group adopts this program, together we can make a sizable donation which hopefully will ensure we continue to enjoy the benefits of quality software at a reasonable price through shareware. Please consider this concept and discuss it at your next meeting. Support the Atari Revolution by supporting your favorite shareware author.

John L. Hutchinson
ACE of New South Wales
Sydney, Australia

VKILLER TO THE RESCUE

I'm writing to let you know how much I appreciated the VKILLER program on the May 1990 disk. Little did I know that over 15 percent of my software had a virus on the disk! Of all the infected disks, all but one had the Kubold virus. The exception was a demo disk from Sonic Access, which had the Key virus on it. I've traced the source to a "friend" who loaned me some disks with games on them.

My thanks to George Woodside for writing an easy-to-use and informative program to detect and kill viruses. Are you sure I don't have to worry about my hard disk? The article mentioned that a virus on a hard disk for the ST has yet to be detected.

Thomas Prossima
Redwood City, CA

The Kubold and Key viruses spread profusely but have no harmful effects. They are also restricted to floppy disks and do not spread to hard disks. VKILLER author George

Woodside is aware of a Link virus that affects hard disks in Europe, but as of press time, it has not been reported in the United States. — START Ed.

PC-DITTO II SAGA ... CONCLUDED?

I have been following the pc-ditto II saga closely as I was one who ordered the board when the first announcement came to the owners of the software version.

I am happy to report I have mine up and running (WordPerfect 5.0, Plan Perfect and Data Perfect) in a 1040STF, with the board outside the radio-frequency shield. I had to write two letters to Avant-Garde before it worked, but their responses were prompt and comprehensive. I was fortunate enough not to need the new chips on the board. I followed their recommendation to solder the connector clip to the 68000 chip. I question the capability of any clip to stay attached with just a friction fit. But apparently, the sponge-rubber insulating material supplied was not thick enough to prevent contact with the shield when the cover was installed.

Personally, I think Atari has to share the blame with Avant-Garde. Atari has built a plethora of machines with differing internal designs and have not been very helpful with information for anyone outside the company. I may have bought my last Atari computer.

Ken Springer
Betles, AK

For further details on pc-ditto II, see the review in the July 1990 issue of START. — START Ed. ■

News, Notes & Quotes

BY STEPHEN MORTIMER

Atari Earnings Take A Nosedive

Atari Corp., citing intense competition in the video-game business, reported a 52.9 percent drop in first-quarter 1990 earnings. Net income dropped to \$1.5 million, or three cents per share, from \$3.3 million, or six cents per share, in the same quarter of 1989. Sales slipped to \$85.5 million in first quarter 1990 from \$88.8 million in 1989. Revenue grew for Atari's personal-computer line and the Lynx hand-held game system, but fell for its older models of video-game machines.

Inside Atari

Now that the hardware design has been finalized, the 16-bit TT system is off to the FCC. Reports from Europe indicate that the UNIX-based TT030/X will come with 2MB of video RAM and 4MB of fast RAM. A high capacity hard disk and multiple VME bus slots will come in a tower case. While the TT030/X uses AT&T's UNIX version 3.1, it is almost fully compatible with the Berkeley standard. X/Windows is topped by

X.Desktop, a variation of GEM for UNIX.

The release of Atari's so-called Advantage package, a computer/software bundle, has been delayed due to lack of 520ST software. Atari will continue to search for titles that run on as many different televisions as possible. The package will retail for \$399.

The report in last month's column that the Lynx Mark II will lose functionality was incorrect. The Mark II will be smaller but still functional. All

the current features, including screen size, will be left intact.

Atari recently signed with ASCII, a purchasing group that will let its members buy Atari equipment. The ASCII network includes 400 computer dealers nationwide. According to James Fisher, Atari Vice President of Marketing, a majority of ASCII dealers will carry the Portfolio and ST lines.

The Business Software Group, a software piracy watchdog, claimed that Atari Taiwan Manufacturing in Taipei is pirating copies of Lotus and Ashton-Tate software for use on IBM systems. Atari responded that BSG is exaggerating the issue, and that if illegal copies do exist, they are being made without Atari Taiwan's knowledge or permission. Atari CEO Sam Tramiel stated that Atari will investigate the matter, but that the copies are most likely personal copies used by employees on their own systems.

Fat Bits

- Commodore International named Nolan Bushnell to head a special team to develop, coordinate and market interactive, Amiga-based consumer products. Bushnell, 47, founded Atari Corp. in 1972. He sold it to Warner Communications in 1976. Jack Tramiel bought the computer division in 1984.
- Atari is now shipping their Megafile 44 removable hard drive to dealers. Atari also has a new laser printer in the works. Designated the SLM605, it is reported to be smaller and much more quiet than the SLM804.

World of Atari, Anaheim

BY DAN FRUCHEY AND DAVID PLOTKIN

World of Atari, was held April 7 and 8, 1990, at the Disneyland Hotel in Anaheim, Calif. Attendance was around 4,000, down from last year's number. Some highlights:

Atari Corp.'s display dominated the middle of the convention floor with a wide variety of machines including a pair of TT computers, the hand-held Portfolio and a collection of portable Lynx game machines.

At the developer's get-together, Atari announced SoftSource, a library of software demos, source code and utilities. Registered developers can access the library on GENIE by typing ATARIDEV at the prompt and then upload their ideas, impending product releases and demos. Softsource will reportedly be open to the public by Christmas 1990 and will also be transferred to CD and distributed to dealers with the Atari CD-ROM.

Nathan Potechin of ISD Marketing showed Calamus Outline, a companion product for Calamus which uses a variety of special effects to customize text

and graphics. He also sold a limited number of copies of the new book *The Guide To Calamus Desktop Publishing*. Finally, Potechin announced three new versions of Calamus slated for release in fall 1990.

Imagen Corp. showed some of the power behind Ultrascript by producing full-color pages using a Hewlett Packard Paintjet printer. Ultrascript fonts will work with any program that produces Postscript output, including Fleet Street Publisher 3.0, PageStream and Timeworks Publisher. Imagen also announced a reduction in font prices to \$49.95 per set. Representatives at the show stated they are currently working with Atari Corp. to incorporate Ultrascript fonts into GDOS. No release date has been set. (The introduction of a single standardized font format could make a drastic difference in Atari's acceptance as a DTP solution.)

SST Accelerator Board Shown At WOA

The SST accelerator board for the ST was shown by Gadgets by Small and Fast Technologies for the first time at World of Atari. The board, which is still under development and requires FCC certification, uses a Motorola 68030 microprocessor and small amounts of very fast RAM to provide a computer that is significantly faster than an ST equipped with any other accelerator board. In most tests, the SST-equipped ST matched Atari's new TT.

The basic board will include a 16 Mhz version of the 68030. This configuration gives a speed advantage of about 2-1/2 times over the ST.

Gadgets by Small is looking to release the SST in November 1991. A tentative price has been set at \$1000. ■

ALERT BOX

Because "The ST In Hollywood," (START, May 1990) primarily discussed how a Mega-based system was used for post-production sound editing on the movie "Born on the Fourth of July," the valuable contributions of the film's other sound artists may have been slighted.

The majority of the production sound recorded on the set during the filming of Born on the Fourth of July" was in fact excellent, thanks to production sound mixer Todd Maitland and his crew. An unfortunate page break in the article may have given the false impression that Maitland's production sound was not well done. START apologizes for any misunderstanding this article may have caused.

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European Report

Atari Germany donated 18 1040STs (a total value of 30,000 deutsche marks, or \$18,000) toward the last East German elections. The computers initially went to the West German institution, Elections, which, in turn, helped the West German television network, ZDF, predict and report election results from their temporary studio in the Palace of the Republic in East Berlin. After the elections the STs remained in East Germany. Atari computers have been used in local West German elections since March 1988.

The Atari Transputer Workstation is not only alive but is beginning to kick as well. A regular window dress-

ing on recent Atari exhibitions, the ATW is now on sale in Europe. In their review of the ATW800, Netherlands-based magazine *Personal Computing* reported that the Workstation costs 16,800 Dutch guilders (about \$10,000). The 20MHz T800 transputer-based machine includes 4MB of RAM, a Helios operating system and X-Windows.

STEs are catching on in Europe, but so are the TOS 1.6 bugs. Many programs don't run at all. Some software houses are releasing STE updates daily. Others, such as Microdeal/MichTron, are publishing

programs written specifically for the new machine. The most notorious bug is that the STE insists on booting in low resolution, regardless of the DESKTOP.INF file. Atari U.K. has released a software patch, but there is a three-step manual fix as well.

F-Modem version 1.0 is a terminal program for the Portfolio. Supplied on a ROM card the software will transfer data to and from an ST. F-Modem follows the Xmodem protocol. It is sold for 119 deutsche marks (\$70) from Hoco EDV Anlagen, Ellerstr. 155, 4000 Dusseldorf, West Germany. ■

If you have a hot tip let us know at **News, Notes & Quotes, START Magazine, 544 Second Street, San Francisco, CA 94107**

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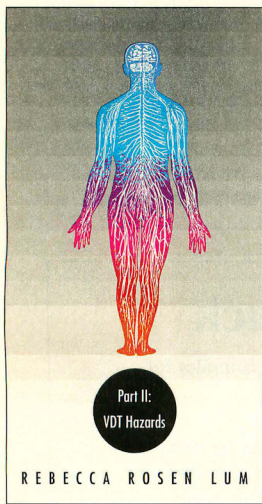
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The Body



Labor-saving devices are supposed to help, not hurt. But the computer, the wunderkind of productivity tools has been associated with health hazards ranging from inflamed wrists to miscarriages. In the second of two articles, Rebecca Rosen Lum explores the controversy surrounding prolonged use of video display terminals.

Caught off guard may be the best way to describe the computer world's response to the spate of ailments befalling video display terminal users. Reports of eye problems and a scattering of unexplained "clusters" of birth defects and miscarriages have sent unions rushing to the bargaining table to secure protection for employees.

By far the most controversial and hotly debated safety issue for unions

and business is the possible hazard to computer users due to electromagnetic emissions from their terminals. The least controversial and best-researched of disorders linked to long hours at the VDT are eye problems.

While no studies have linked monitor use with permanent eye damage, temporary ailments caused by hours of intense focusing combined with glare can be quite debilitating, as San Francisco resident Steven Michael discovered.

Michael had been working at the San Francisco Newspaper Agency for 10 years when the computer revolution arrived. The 45-year-old finance department supervisor and his colleagues trained for months in a temporary office that offered adjustable workstations, antiglare screens and directed lighting as they mastered what he calls "a very complex system."

Computer literate, they brought their new skills back to their old

Electronic

office. "It's in a very old building," he says, "with fluorescent lighting, white walls and no-glare screens" — an ergonomic minefield. Michael watched his staff's new confidence quickly erode as eye problems and headaches became the norm.

"My headaches started within days," he says, "And once they started, it was non-stop. It wasn't like I had good days and bad days. It was very wearying." Worse still, hours after Michael had left the office, the headaches stubbornly persisted. "Literally, if I went to read the newspaper, the page was just an indecipherable sea of black and white. I couldn't focus, I couldn't read. It would last for several hours. The next day, it would start all over again."

Months later, when glare screens arrived, relief swept the department. "They've made an enormous difference," he says. "The next day we didn't have people aching all over with migraine headaches. My question about glare screens is, how do you live without them?"

Apparently, many do. Some 90 percent of computer users suffer from eye strain and vision problems, according to the National Institute for Occupational Safety and Health. Eye fatigue, blurred vision, chronic headaches and "after images" are common among the 15 to 19 million VDT users in the workplace.

Clinical Studies

A recent study by Dr. James Sheedy of the University of California at Berkeley revealed unexpectedly high numbers of 20- to 40-year-old VDT users suffering from eye problems. Dr. Sheedy, who is chief of the university's School of Optometry VDT Eye Clinic, says one-third of his clinic's patients have an accommodative eye problem, compared to 15 to 20 percent in other clinical populations. Focusing closely on a VDT screen without interruption may be the culprit, he believes.

He recommends pausing "to look off into the distance — every 10 minutes for 10 seconds, say, to allow the accommodative mechanism to fully relax. Looking off into the distance relaxes the muscle that needs to contract (to enable us) to look up close."

He blames the changing workplace, which is all too frequently not geared to computer use, for much of the eyestrain VDT users experience, but adds that most eye problems can be avoided by applying what researchers have already learned.

"Overhead lights used to be no problem when people looked down (at their desks)," he says. "Now, with VDTs, people are looking straight ahead, and overhead fluorescent lighting is a problem." Wearing a visor at work is a good idea for those

who operate a VDT with bright lights in their peripheral vision, he adds. Ergonomists also recommend positioning the VDT at a 90-degree angle to windows, dimming the lights to a moderate level, retrofitting fluorescent lights with "baffles" that reduce glare, fitting windows with anti-glare screens or blinds and putting a glare screen on your monitor.

What about the resolution of the image itself? The image on the VDT is created by phosphors that glow when scanned by the terminal's electron beam. The image lasts only as long as the phosphors glow, which is actually an extremely brief time. It must be re-illuminated, or "refreshed," by another electron beam quicker than the eye can perceive in order for the image to appear continuous. The "refresh rate," then, refers to the number of times the electron beam scans the phosphors per second. "Flicker" occurs when the refresh rate is sluggish enough that the eye can perceive the changes (the eye can pick up changes somewhere in the range of 20 Hz to 100 Hz (100 Hz equals 100 times per second). Flicker rates that are barely perceptible to the eye nevertheless cause the eye to continuously readjust, bringing fatigue. Designers say European labor unions, much stronger than in the United States, have pressed for, ▶

Computer Hazards — Legislation and Litigation

In 1987 the Suffolk County, N.Y., legislature became the first in the country to regulate video display terminals. It passed a bill forcing any employer operating 20 or more VDTs in the county to provide workers with eye care, adjustable work stations, glare-reducing lighting and 15-minute breaks (or alternate work) for every three hours of VDT use. The bill, which also required safety training and health education on the job, was enforced by a system of inspections and fines. In support of the law, unions claimed that companies would benefit from a significant boost in productivity, fewer sick days and a reduction in insurance costs resulting from worker injury.

On Dec. 27, 1989, New York State Supreme Court Judge John Cupertino, in a suit brought by a business coalition, overturned the law, saying that only the state of New York or the federal government had the authority to enact such legislation. Suffolk County may appeal on the grounds that a county may act in the absence of state or federal law.

The state of Connecticut is considering drafting leg-

islation similar to Suffolk County's; Maine passed a greatly diluted version of the law in 1989.

New York City

Former New York City Mayor Ed Koch vetoed a VDT health and safety bill last December that would have affected 14,000 municipal workers. Koch said there was not enough medical evidence to justify the \$30 million cost of implementing the bill, which, among other things, would have allowed pregnant workers and those with certain medical conditions to transfer for up to one year without losing pay or seniority. If the bill passes under Mayor David Dinkins in 1990, it will be the first of its kind in a major American city.

New Jersey

The New Jersey State Department of Public Health issued guidelines last fall to protect its 500,000 public employees who operate VDTs in government offices and school districts. The guidelines mandate 15-minute breaks every two hours and eye exams every two years.

and won, a commitment from industry to produce monitors with a minimum refresh rate of 70 Hz. There is no standard in the United States; the average runs between 56 and 60 Hz (although some industry insiders say the refresh rate of American-made products will soon match that of the European to enable American companies to compete more effectively overseas).

What does all this mean for the personal computer owner who, on a shoe-string budget, invests in a used computer?

It means the image on a monitor more than five years old may look like a Chaplin flick compared to the crisp images generated by today's screens.

"I wouldn't say most people are working on state-of-the-art equipment," says Laura Stock, director of the Berkeley, Calif., VDT Coalition.

"Looking at a flickering screen can lead to a seasick feeling."

In the workplace, it is in an employer's best interest to consider such issues as image resolution and lighting. "Some employers are," she says, adding, "Some resist being told to do something they didn't choose to do, even if in the long run it saves them money in workers compensation and productivity."

Dr. Sheedy says, "We need to know more about lighting and lighting geometry on vision and visual performance, about what is happening to the eyes and the binocular system. But much of the discomfort people are experiencing can be eliminated knowing what we know now. The problems are partly caused by a lack of application."

The Radiation Debate

Sentiments run high when those in

the science community, computer world and industry discuss another danger tagged to VDT monitors — pulsed electromagnetic emissions.

Controversy focuses on low-level electromagnetic emissions, known as non-ionizing radiation because, unlike X-rays, they cannot break apart atoms. But, some scientists maintain, that doesn't mean they're safe.

While it was once assumed that low-level electromagnetic fields — produced by hair dryers, toasters, electric blankets and computer terminals — couldn't cause cell changes, a recent study by the Office of Technology Assessment revealed that even very weak pulsed electromagnetic fields can produce mutations and other biological changes in cells and organisms.

At the second international

California

A bill introduced by Assemblyman Tom Hayden passed the state Assembly in June 1989 requiring new VDTs, associated furniture and lighting in any California workplace to conform with the ergonomic guidelines of the American National Standards Institute. The bill also requires the state to form a committee to set guidelines for VDT use by pregnant workers. The state Senate, however, held the bill over for reconsideration in 1990.

AT&T

In 1985 a Washington, D.C., woman filed a workman's compensation claim against her employer, American Telephone & Telegraph Co., saying that her skin rash was caused by VDT exposure on the job. AT&T fought the claim but settled in 1987 for an undisclosed amount.

U.S. West

In October 1987, 30 Denver telephone operators at Mountain Bell (now U.S. West) sued Computer Consoles, Inc., a keyboard manufacturer, for repetitive

strain injuries allegedly caused by their product. The keyboards were replaced but the suit continues. In addition, the employees' union filed a complaint with the federal Occupational Safety and Health Administration, which reached a settlement with U.S. West late in 1988. The company was required to redesign workstations, provide ergonomic training for all Denver employees, and hire an ergonomics coordinator to inspect all directory assistance locations in its 14-state territory and make a formal report to the union.

The Fresno Bee

In the spring of 1989 the Northern California Newspaper Guild lodged a complaint with the California Occupational Safety and Health Administration on behalf of the editorial staff at the *Fresno Bee*, one-third of whom complained of musculoskeletal disorders. CALOSHA ordered the newspaper to provide adjustable furniture, hourly breaks and ergonomic training. The *Bee* appealed the order and the two parties entered into settlement negotiations in March 1990. ■

— BY ADELE BONOVITZ

conference on VDTs and health in Montreal last September, researcher Hakon Frolen of the University of Agricultural Science in Sweden linked non-ionizing radiation exposure soon after conception to the high rate of fetal deaths among laboratory mice in his study.

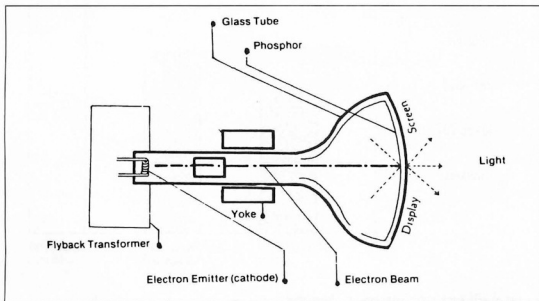
Furthermore, a 1982 case-control study by researchers at northern California's Kaiser Permanente medical group revealed that women who work at VDTs for 20 hours or more each week stand an 80 percent higher chance of suffering a miscarriage than women who do not work

at VDTs. Although researchers emphasized that they could not determine the reason for the elevated risk, they reported that "this risk could not be explained by age, education, occupation, smoking, alcohol consumption, or other maternal characteristics" and called for more research.

This study, as well as anecdotal reports of "clusters" of miscarriages among pregnant VDT users in the United States, Canada and Europe, resulted in public pressure for more research into possible VDT hazards.

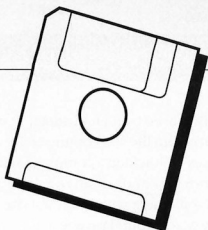
One such study of VDTs and pregnancy outcomes, the first of its kind, is under way at the Mt. Sinai School of Medicine. It will track women who work with VDTs from conception on, rather than rely on the memories of participants, as do retrospective studies.

Most recently, public health researcher Dr. Lars Brandt of Den-



Cathode-Ray Tube

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VDT HAZARDS

mark found no correlation between VDTs and negative pregnancy outcomes in his epidemiological study of 6,212 women and 6,541 pregnancies.

Men At Risk

But women of childbearing age are not the only users who risk harm by putting in long hours in the glow of the VDT. A study funded by the Department of Energy revealed that men between the ages of 21 and 35 had 10 percent slower motor responses after being subjected to low-level electromagnetic fields. In fact, researchers have found that many changes in cell structure seem to occur after exposure to low-frequency emissions at low doses, or at certain frequencies that scientists call "power windows."

Discussing the possible hazards of electromagnetic fields, watchdog Louis Slesin, editor of *VDT News*, says, "I'm especially concerned about children, because they use computers at school, they do video games after school, do their homework on a computer at home and watch

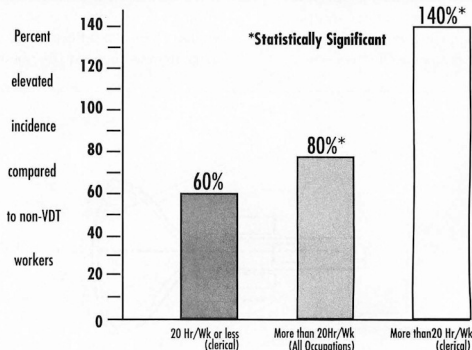
television. They're getting more exposure than some workers."

While industry heads have scoffed at possible health threats posed by electromagnetic emissions in VDTs, last November IBM quietly introduced in this country a low-radiation monitor they already were marketing in Europe.

Some 90 percent of computer users suffer from eye strain and vision problems.

Entrepreneurs are also putting products on the market. George Lechter, the MIT-educated engineer who founded Safe Computing Company, sells a high-resolution liquid-crystal monitor, or LCD which produces no electromagnetic radiation. (Most computer terminals are cathode-ray tubes, which produce

Miscarriages among VDT workers



Hrs of VDT Work in first Trimester of Pregnancy
Kaiser Permanente study

pulsed electromagnetic fields.)

Lechter and his associates recently tested several CRT monitors in a Needham, Mass., computer center. They measured very low frequency and extremely low frequency magnetic emissions from a user distance of two feet in front of each VDT. The monitors, he said, clocked in at astonishingly high levels, ranging from 0.5 milligauss to 8.1 milligauss — and those in a monitor marketed to children.

What worries Lechter about those measurements are studies like that of University of North Carolina researcher David Savage, which linked childhood tumors, including central nervous system tumors and leukemia, with exposures of one to two milligauss generated by power lines near the participating children's homes.

Critics Speak Up

Critics like Slesin lambast the federal government for not having conducted similar tests in controlled conditions long ago. "We could all test our gas mileage, but it's easier for the EPA to do it," he says. "The government is asleep on this. Nobody wants to know the numbers."

Writer Paul Brodeur sent pulsed waves of his own through the popular science community recently with the publication of his article "The Annals of Radiation" in the *New Yorker* magazine and with his book *Currents of Death*, in which he claims not only that ample evidence points to the dangers of low-frequency electromagnetic fields, but that the government, industry and the media have been covering up the fact.

But the Center for Office Technology, an industry group, released its own paper criticizing Brodeur's challenge. In it, they accuse Brodeur of stacking the deck with selective findings. COT's executive director, Dr. Bruce Dickerson, says, "Radiation

from VDTs have been studied both here and abroad. The overwhelming conclusion is that the radiation emitted by VDTs pose no threat to human health." Brodeur "did an incomplete job of evaluating the literature," he adds. "The vast majority of scientists do not concur with him."

Keeping Safe

Ironically, there is no standard screening, testing, or licensing for computer monitors as there is for televisions, which also use a cathode-ray tube — and from which viewers are encouraged to keep a distance of 10 feet.

So what can workers and VDT home users do to protect themselves while the controversy rages? The New York Committee for Occupational Safety and Health suggests limiting the number of hours spent at the VDT. (Sweden mandates a maximum workday of four hours at the VDT.) It further suggests women who work at VDTs on the job seek alternative assignments during pregnancy.

Because a Polish study revealed exposure to VDT levels of radiation affected the testicles of laboratory mice, NYCOSH further suggests that men who want to father a child protect themselves as well.

NYCOSH also warns against sitting within four feet of the backs or sides of neighboring computers, where the flyback transformer generates the highest level of electromagnetic emissions.

While all concerned are calling for more research, the thorny issue seems to be how far manufacturers and employers should go to protect VDT users until more is known. Asks the VDT Coalition's Laura Stock, "Do you err on the side of caution or do you let people be the guinea pigs?" ■

Rebecca Rosen Lum is a San Francisco-based freelance writer.

HELP WANTED

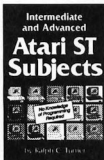
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CARDMASTER

Four Shuffles in One

BY SUSAN D. PHILLIPS

Gin Rummy? Draw Poker? Acey Deucey? Name your game! Susan Phillips shuffles them all for you in her addictive jumbo pack, CardMaster. You've been warned, now deal the cards!

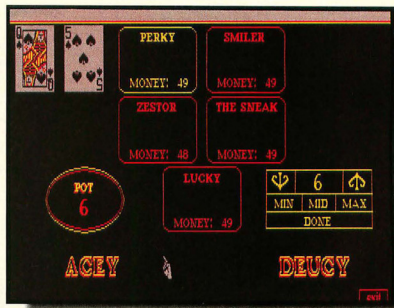
AT A GLANCE

Program:	CardMaster	
Type:	Game	
Requirements:	512K, medium rez	
Arcfile:	CARDGAME.PRG	
Files:	BORK CARDMAST.DOC CARDMAST.PR CHONE CHTWO CHZERO	HLJG MEFI SOKY STUFF WILD YOFI
Language:	OSS Personal Pascal	

CardMaster requires special datafiles from the archive file CARDBOOT.PRG; see the sidebar "Installing CardMaster." Once the datafiles are installed, double-click on the archive file CARDGAME.PRG and choose Extract when the dialog box appears. Select a destination disk



Draw Poker



Acey Deucey



and the files will un-ARC directly onto that disk. Make sure that BORK, CHONE, CHTWO, CHZERO, HLJC, MEFI, SQKY, WILO and YOFI are in the same folder as CARDMAST.PRG. To start the program, double-click on CARDMAST.PRG.

All commands in CardMaster are mouse-controlled, using the left button. To get to the Main Menu, click anywhere on the title screen or simply move the mouse. Six decks of cards appear. The two labeled Info and Quit are self-explanatory. Click on any of the other four to start a card game.

Pitch

Pitch is a two-player game, you versus the computer.

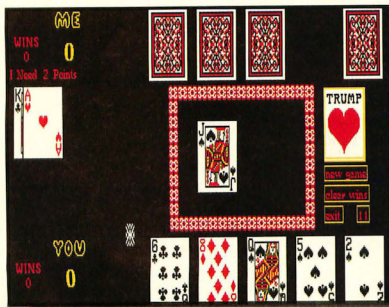
The first dealer is chosen at random. You each get six cards. To play, you and your opponent each lay down one card at a time following suit whenever possible. To lay down a card, simply click on it. Each pair of cards constitutes a "trick." A trump is a card of the first card played. A trump always wins the trick. Otherwise, the trick is won by the higher ranking card in the suit that was led. The winner of the trick leads on the

next play. The last card in the hand is played automatically. When all the cards have been played, points are added to or subtracted from your score based on your initial bid.

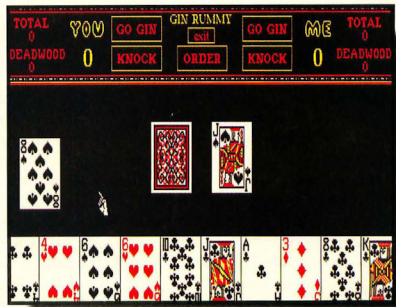
There are three bids. The non-dealing player bids first. Pass is a bid of zero and passes the bid to the other player. The numeric bids of 2, 3 or 4 refer to how many categories you think your cards can win. (For instance, if you think you can get HIGH and GAME, bid 2.) SHOOT THE MOON is a bid to win all tricks as well as all categories.

If the first player passes, the second player must bid at least 2 or SHOOT THE MOON. To bid, click on your selection. Only legal bids for each situation will appear on the screen. The highest bidder plays first.

Scoring occurs at the end of each hand according to the number of tricks won and the number of categories captured. You receive one point each for holding the HIGH (highest trump) card, the LOW (lowest trump) card, the JACK (in the trump suit) and for GAME. If there is a tie, nobody wins the GAME category. ▶



Pitch



Gin Rummy

At the end of each hand, points are added to each player's score, unless you were the high bidder and do not match your bid. Then the point value of your bid is deducted from your score regardless of how many categories you won. If you bid to SHOOT THE MOON and don't, you lose automatically.

Acey Deuce is a game of chance.

You may limit the game score to 7, 11, 15, 21 or 50. The default is 11. To change it, just click on the TRUMP box (or hold the mouse button down) until the desired amount appears in the lower right box. The player who reaches the game score first, wins.

Click on the appropriate box to start a new game, clear wins or exit to the Main Menu.

Gin Rummy

Gin Rummy is another two-player game, you and the computer. Each player is dealt 10 cards. The remainder of the pack goes face down to form the stock pile. The top stock card is exposed next to the stock, serving as the first card of the discard pile.

To go gin, your entire hand must be grouped into sets of at least three cards forming three- or four-of-a-kind or runs of the same suit. If the deck runs out (which rarely happens), the hand is a draw.

To play, click on the top card of either the stock or discard pile, try to create sets with your hand and discard deadwood.

When the computer plays, the card it chooses will appear temporarily in the upper right corner of the screen, either exposed (from the discard pile) or face down

(from the stock pile).

To choose a card, click on either the stock pile or the discard pile. The card will appear to the left of the screen. To discard it, click on the discard pile. To keep it, first click between any two cards or at either end of your hand. An arrow will verify that you want it placed at that location. Then click on the card in your hand that you want to discard.

Before you click on the CONTINUE box (and end your turn), you can click on ORDER. When either you or the computer goes gin or knocks, your hand is checked according to its order.



To automatically organize your hand, click on the ORDER box. The sets are placed on the far left, potential sets next and the least desirable deadwood on the right. You can also organize your hand manually. Click on the card to be moved (an arrow will verify your selection). Then click between any two cards or at either end of your hand. To exit the order mode, click on the ORDER box.

You now have the choice to GO GIN or KNOCK. To knock you must hold less than 10 points worth of deadwood (or unmatched cards that

fit into none of your sets). Knocking forces the opposing player to reveal cards. If you knock, and any of your opponent's deadwood cards can contribute to any of the your sets, then those deadwood cards are not counted against your opponent. This is called "laying off." When a hand is knocked, arrows will point to the cards that are laid off.

Going gin is worth 25 points plus the opponent's deadwood count. Knocking is worth the opponent's deadwood count (not including cards that were laid off), minus the knocker's deadwood count. However, if the opponent holds a deadwood count equal to or lower than that of the knocker (known as "underknocking the knocker"), then the knocker gets nothing and the opponent gets 25 points plus the difference of points between the two hands.

Each picture card is worth 10 points, an ace is worth one, and all others are worth their numeric value.

At the end of each game, the winner gets the difference between the two scores plus 100 bonus points. Each player gets 20 points for every hand won in the game. If one player wins all hands, the game is a shut-out, and the winner gets an extra 100 bonus points.

Draw Poker

Draw poker is a game with five players: you and four computer opponents. Each player begins with \$50. The dealer antes (bets) \$5 and deals each player five cards. To play, simply click on the box of your choice. Only legal options will be displayed.

Betting begins at the dealer's left. You can either OPEN (bet \$5) or FOLD (drop out of the betting). Subsequent players can CALL (match the previous bet), RAISE (match the previous bet and raise it an additional \$5) or FOLD. When all

players have contributed equally to the pot, the round of betting ends and the DRAW begins.

You can discard and DRAW up to three new cards. Click on the cards you want to discard. If you exchange less than three, click on your info box to continue.

The second round of betting begins with the player who opened (or the next clockwise player, if the opener has folded). That player can CHECK (pass, staying in without betting anything further) or BET (bet \$5). If someone bets, each player in turn may CALL, RAISE or FOLD until all bets have been equalled, or only one player, automatically the winner, remains.

If two or more players are left, a showdown occurs. In the showdown, all hands are exposed and the holder of the best hand wins the pot.

The hands are ranked, highest to lowest:

Royal Flush: five cards of equal suit in sequential rank, with the ace as the high card.

Straight Flush: five cards of equal suit in sequential rank.

Four-of-a-Kind: four cards of equal rank.

Full House: three cards of equal rank and two of another.

Flush: five cards of the same suit.

Straight: five cards in sequential rank.

Three-of-a-Kind: three cards of equal rank.

Two Pairs: two cards of one rank and two of another.

One Pair: two cards of equal rank.

When more than one player has the same rating, the rank of their cards, ace high, is compared.

In the rare event that the hands are still equal, those players tie and split the pot.

Acey Decuy

Acey Decuy is a five-player game that allows up to five human players.

It is a game of chance, much like roulette. You get two cards, both face up, and you bet on the probability of the next card falling in rank between the two in your hand. There are set characters in Acey Decuy; choose who you want to play by clicking on their info boxes. Up to five human players can play. Click again on the info boxes to change a human player into a computer one. Click on DONE when you've made your selections.

The first dealer is chosen at random. The ante and minimum bet is \$1. The maximum bet is either the size of the pot or the money the player has left, whichever is less. If the first card (on the left) is an ace, it is low. If the second card dealt (on the right) is an ace, it is high.

If the two cards in the hand are of equal or sequential rank, then a bet is impossible to win and \$1 is automatically bet and lost.

The same dealer then deals to the next player and each player clockwise in turn takes a turn until someone wins the pot. When the pot is won, all players ante again. The deal then passes to the player on the dealer's left, who shuffles the deck and deals to the player on his left. Reshuffling also occurs whenever the deck runs out.

When it's your turn, you will see a betting dialog box. The initial default is your maximum bet. You can choose MIN to change to the minimum bet, MID to go to half of the maximum bet, MAX to return to the maximum bet, or click on one of the arrows to raise or lower your bet \$1 at a time.

The game ends either when all human players go broke, or when only one active player remains. ■

Susan Phillips is a flight information coordinator and support representative for American Airlines. This is her first program for START.

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INSTALLING CARDMASTER

AT A GLANCE

Program:	CardMaster Boot Files
Type:	Game datafiles
Requirements:	Use with CardMaster
Arcfile:	CARDBOOT.PRG
Files:	ASSIGN.SYS ATTR10CG.FNT ATSS10CG.FNT ATTR12CG.FNT ATSS12CG.FNT ATTR18CG.FNT ATSS18CG.FNT ATTR24CG.FNT ATSS24CG.FNT GDOS.PRG

CardMaster uses Atari's GDOS fonts to produce its superb visuals. In order for CardMaster to use GDOS, certain files must be present when you boot your computer. These files are in CARDBOOT.PRG. From your START disk backup, double-click on CARDBOOT.PRG and choose Extract when the dialog box appears. Select a destination disk and the files will un-ARC directly onto that disk.

Configure the root directory of your designated boot disk as follows:

```
ASSIGN.SYS \AUTO folder \FONTS folder
GDOS.PRG ATSS10CG.FNT
ATSS12CG.FNT
ATSS18CG.FNT
ATSS24CG.FNT
ATTR10CG.FNT
ATTR12CG.FNT
ATTR18CG.FNT
ATTR24CG.FNT
```

If you have a single-sided drive system, create another disk for the CardMaster game files, found in CARDGAME.PRG. The entire CardMaster program, including GDOS, fits onto a double-sided disk. Put CardMaster anywhere you wish on a hard drive. If you're using

a Mega, keep the blitter on.

GDOS fonts are loaded at boot time, so ASSIGN.SYS and the FONT and AUTO folders must be in the root directory of the boot disk in order for CardMaster to run properly. If you never see the CardMaster title screen when attempting to run the game, it's most likely that GDOS was not loaded. If CardMaster runs, but the words on the screen are misaligned, misshapen or littered with extra characters, it's most likely that the proper fonts weren't loaded. Check that the files on your boot disk are configured as directed, then reboot.



(Editor's Note: GDOS is the property of Atari Corp. GDOS and its fonts are distributed on your START disk for use with CardMaster only. They cannot be reproduced or in any way distributed without the prior consent of Atari.) ■

If you've read the article on CardMaster, you know that you're supposed to place GDOS.PRG into the AUTO folder of your boot disk. Why?

Because CardMaster uses GDOS to load the fonts it needs. GDOS is, technically, a part of GEM, even though you have to load it from disk. GDOS installs itself when you boot your machine, then it is responsible for graphics calls to any other device besides the screen, such as printer or plotter. Also, if you're tired of seeing the same old system font, GDOS is responsible for loading any other fonts you might want to use.

To explain how GDOS works, the first thing we need to do is to look at the file ASSIGN.SYS. This is an ASCII file, so if you double-click on it and choose Show, you'll see on your screen:

```
path = \font
;
01p screen.sys
02p screen.sys
03p screen.sys
ATSS10CG.FNT
ATSS12CG.FNT
ATSS18CG.FNT
ATSS24CG.FNT
ATTR10CG.FNT
ATTR12CG.FNT
ATTR18CG.FNT
ATTR24CG.FNT
04p screen.sys
```

ASSIGN.SYS is simply a file that tells GDOS what fonts to load, where to find these fonts and what screen resolution (or device) these fonts are for.

Look at the first line, **path = \font**. This tells GDOS that the fonts you want to load are in the FONT folder of the current drive. You could, if you want, use a text editor (or word processor that saves files in ASCII) and change the path name to **path = c:\font**. This tells GDOS to look only on drive C in the

GDOS TUTORIAL

BY JIM BURTON

folder FONT for the font files.

The next line, after the semicolon (which is used for remarks), is **01p screen.sys**. This refers to the built-in default screen driver. **02p screen.sys** refers to the low-resolution screen, **04p screen.sys** to the high-resolution screen and **03p screen.sys** is the medium-resolution screen. It is the latter resolution for which the fonts that come with CardMaster are intended, so it is after this line that the font filenames are listed.

Decoding Filenames

If you want different fonts loaded depending on the screen resolution, list their filenames after the appropriate screen.sys line. Now, looking at a font filename, such as **ATSSIOCG.FNT**, you may wonder if it is some kind of code, and if so, exactly what it means. It is a code, one that can tell you if the font will work with your system or with your printer. The first two letters, AT, refer to the creator or distributor of the font, Atari. The next two letters indicate the font style, SS, meaning Sans Serif, also known as Swiss. Then we have the point size of the font, 10. Finally we have the device for which this font is intended, CG, meaning Color Graphic.

We have eight fonts listed here, but, if you look closely, you'll notice that the first four are SS fonts and the second four are TR fonts, which means Times Roman (also known as Dutch). This means that we actually have only two different font styles, each with four different point sizes. When we finally get around to loading these into the computer, GDOS will tell us that we have three fonts available: the built-in system font and the Swiss and Dutch fonts we have loaded from disk.

It is important to note that GDOS

reads ASSIGN.SYS only when you boot your machine. If you want to change the fonts to load, the location of the fonts, or the screen resolution under which the fonts will load you must make the appropriate changes to ASSIGN.SYS and then reboot your computer so that GDOS will recognize your changes.

Viewing Fonts

Enough about ASSIGN.SYS. Time to break out your favorite programming language (I'll use GFA BASIC version 3.0) and figure out some code to view the fonts.

First of all, for reasons detailed above, we need to boot up with a disk containing GDOS.PRG in the AUTO folder, and with a copy of the FONT folder from CardMaster, which contains the eight fonts we want to load. Make sure that ASSIGN.SYS is also on the root directory of this disk, not inside a folder. As your computer boots, you

should see a message telling you that GDOS is installed. If not, you may have to get rid of some desk accessories to free up memory for GDOS to load. Now that we're all booted up and ready to go, in the box is some GFA BASIC 3.0 code that will load your fonts and show you what they look like.

If you run this program in low or high resolution, you won't see anything because the ASSIGN.SYS file specifies that the fonts will load in medium resolution only. So switch to medium, or edit ASSIGN.SYS so that the eight fonts appear after the 02p screen.sys (low resolution) or after 04p screen.sys (high resolution). Remember, though, that these fonts were created for the medium resolution screen, so they may look distorted in other resolutions.

Now for the details. In the first line, **GDOS?** is a reserved variable ▶

VIEWING GDOS FONTS

```
' Loading GDOS Fonts
' GFA BASIC 3.0 code
'
IF NOT GDOS?                                ! Check if GDOS is installed
  ALERT 1,"GDOS or G+PLUS|not available.",1,"Abort",dummy&
END
ENDIF
RESERVE FRE(0)—39936                          ! Give some of BASIC's memory
'                                              ! So fonts can be loaded.
num__fonts&=VST_LOAD__FONTS(0)              ! Load fonts in ASSIGN.SYS
FOR i&=1 TO num__fonts&+1                    ! Loop through available fonts.
  font__id&=VQT_NAME(i&,font$)               ! Get the font ID number and name.
  DEFTXT ,,12,font__id&
  TEXT 0,80,"This is "+font$+" , ID # "+STR$(font__id&)
  ^INP(2)                                     ! Wait for keypress.
  CLS
NEXT i&
^VST_UNLOAD__FONTS(0)                         ! Free up memory used by fonts,
RESERVE                                       ! Give it back to BASIC.
END
```

in GFA BASIC 3.0 that returns -1 (TRUE) if GDOS is active or 0 (FALSE) otherwise. If GDOS is not available, we'll stop the program.

Now, when BASIC runs, it claims a large chunk of memory for itself. We need to use the **RESERVE** command to reduce BASIC's memory so that GDOS will have room to store the fonts. The number 39936 is the sum of the lengths of the font files in our FONT folder.

Now we get to the command that actually loads the fonts, **VST_LOAD_FONTS**. We give it the required parameter of zero, and it gives us the number of additional fonts in the variable **num_fonts&**. Now we'll set up a **FOR NEXT** loop to look at these fonts. Note that the **VST_LOAD_FONTS** function returns the number of additional fonts available. It does not include

the system font. Therefore, if **num_fonts&** holds a two, we know that we actually have three fonts in memory; the two we loaded and the system font. So we will loop from one to **num_fonts& + 1** and look at all three of these fonts.

The command **VQT_NAME** provides us with two pieces of information about a certain font, the ID number of the font and its name. We use the variable **id&** to give **VQT_NAME** the number of the font we want to check on; one is the system font, two is the first font we loaded, three is the second and so on. Each font is given an ID number by its creator, and each font with the same typeface should have the same ID number. **VQT_NAME** will give us this number in the variable **font_id&**, and the name of the font in **font\$**.

We use **DEFTXT** to set the

point size of our text to 12, and the actual typeface using its ID number in **font_id&**. Finally, we print it to the screen with **TEXT**.

After closing the loop, we tidy up our memory with **VST_UNLOAD_FONTS** (which does the obvious) and **RESERVE**.

And that's it. For more information about GDOS, I recommend you read "Everything You Wanted To Know About GDOS" by Douglas N. Wheeler. It's a text file that you should be able to find on the major online services, local bulletins boards or at your users group. And while you're at it, check for public-domain GDOS fonts to take a look at and use. ■

Montanan Jim Burton wrote about GDOS printer drivers in the January 1990 issue of START.



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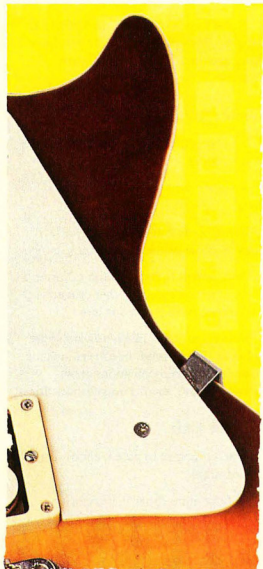
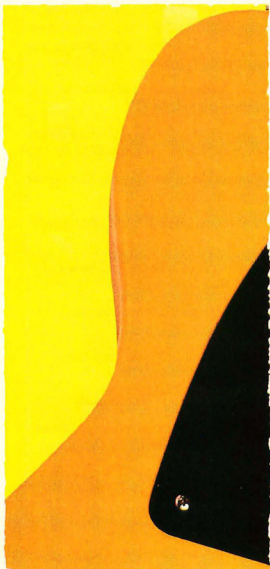
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MULTITASKING ON THE ST

BY JIM PIERSON-PERRY



Last issue, Jim Pierson-Perry discussed multitasking TOS and the existing multi-application systems for the ST. Part II of this special two-part series presents a sneak preview of Atari Corp.'s controversial MIDI-Tasking, and the problems of getting it out the door.

Atari Corp.'s recently announced plan to support a multitasking environment called MIDI-Tasking has generally been met with enthusiasm, particularly from MIDI users. MIDI applications thrive on immediate, real-time interaction with other applications and a multitasking environment with across-the-board compatibility presents a clear solution.

Atari decided such an environment had to follow three criteria: it must be GEM compatible,

it must adapt to existing software and it must run without being tied to a specific parent application.

After several months of considerable evaluation and negotiation, Atari gave the nod to Intelligent Music's ST RAM, one of several independently

online services and caused general confusion. Is MIDI-Tasking a general multitasking solution for the ST? Or is it an application for MIDI users only?

The answer to both questions is yes and no. According to Frank Foster, Atari director of specialty markets and point man for the MIDI-Tasking project, Atari does not have an official multitasking system for ST/Mega computers. "We have a system that has been put together for MIDI power users that happens to have as part of it a limited multitasking shell, but that's not the emphasis of it. MIDI-Tasking came from MIDI developers who had been actively pursuing multi-application manager/operating-system enhancements. The thrust was MIDI, rather than a general user need."

As to whether Atari will ever support a general multitasking environment for the ST, Foster answered, "Atari doesn't feel that multitasking can be properly done on a 68000-based system. All such systems are kludges. Those looking for official multitasking will have to wait for the TT. [Atari] does not want to do multitasking without hardware support." (*Editor's Note:* According to John Townsend, Atari's online representative, the TT does not multitask in TOS mode and it would take a major research-and-development effort on Atari's part to make it happen. No MIDI applications exist yet that can run under the TT's Unix mode.)

Questioned about Atari's policy in view of an existing multitasking system such as Beckmeyer's Micro RTX/MT C-shell, Foster dismissed it as one that "[works] but not very well".

Eric Ameres, a programmer for Intelligent Music and codeveloper of MIDI-Tasking, disagrees with Atari. "MIDI-Tasking is a definite multitasking solution. It does the same multitasking that [Apple's] Multifinder or Microsoft Windows does. Plus, it

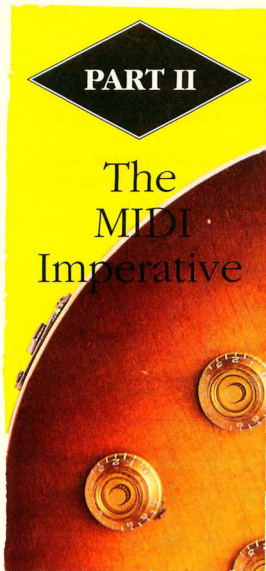
offers the ability to put time-critical multitasking in, as opposed to just interface-level multitasking which Multifinder does. Well-written GEM applications that aren't doing a lot of weird hardware stuff should work fairly easily and require the least amount of fiddling."

The last point is crucial. Not many applications (MIDI or otherwise) work "out of the box" with MIDI-Tasking. The system is still in beta stage and open to suggestions from interested developers. But what constitutes a "well-written GEM program" is still a question. Atari's less-than-stellar developer's-kit documentation contributes to the problem, along with a profusion of new hardware and multiple generations of current products, components and system software.

A House Divided

The schism between MIDI-exclusive and general multitasking has deep roots in internal Atari politics. An unfortunate side effect has been broken promises and limited access to the equipment and information necessary for a bulletproof multi-application environment. Intelligent Music's own involvement with MIDI-Tasking played a part in their recent decision to get out of the software business. According to Ameres the project was never intended to be costly, but later became so. "We hadn't received any support. We had been codeveloping a product with Atari, footing all the bills and doing everything for a product that was not bringing any money in the door for us."

Despite limited past support from Atari, Intelligent Music continues to staff the MIDI-Tasking project and is working aggressively to keep the project alive. An updated beta version is ready and awaiting a move from Atari before its release. Support from other MIDI developers, slow at first, has grown, particularly after ▶



produced systems existing in the music field. Atari announced their choice at the National Association of Musical Merchants trade show in Anaheim, Calif., last January. Beta versions were offered to all interested MIDI developers at that time.

But Don't Call It Multi tasking

Controversy has raged over MIDI-Tasking's practical value to the Atari community at large. Comments, quotes, retractions and position statements from Atari officials and developers have enlivened the major

MULTITASKING

they've seen that many of their current proprietary schemes can co-exist under MIDI-Tasking.

Inside MIDI-Tasking

So just what is MIDI-Tasking and how do you use it?

MIDI-Tasking is an extension of GEM. Multiple applications commu-

Specifically MIDI

For the MIDI programmer, MIDI-Tasking brings a host of centralized functions (currently 43) that are similar to standard BIOS and XBIOS operating-system calls. The main features are control of the MIDI data stream between applications and

All hardware devices, as well as properly written applications, have unique handles within MIDI-Tasking that let you route MIDI data. This is easily done through a patchbay window, mapping sources to destinations just like internal MIDI chords. *Figure 2* shows handles for the MIDI In, MIDI Out and three RS232 MIDI Outs (for an external multiple MIDI-Out device), along with RealTime and general TOS applications.

MIDI-Tasking provides a range of internal hardware clock resolutions to control how often interrupts occur. The nominal value is 1066.7 Hz, roughly one-millisecond intervals (compare that with the default GEM clock resolution of 50 Hz). SMPTE applications work better with a 2400 Hz resolution. At the upper limit of 3200 Hz you'll notice some system slowdown. Four software timers, derived from the hardware clock, provide different time bases for

Atari's MIDI-Tasking presents the clearest solution for music applications that thrive on immediate, real-time interaction.

nicate through the internal desk-accessory pipeline. Memory permitting, MIDI-Tasking can support up to six applications simultaneously (which corresponds to the maximum of six desk accessories that GEM supports). The current beta version only provides for two. Desk accessories may still be present, up to the limit of six. All non-MIDI desk accessories I tried worked fine with the beta version, as did auxiliary programs such as G+Plus, Universal Item Selector II, RAM disks, etc.

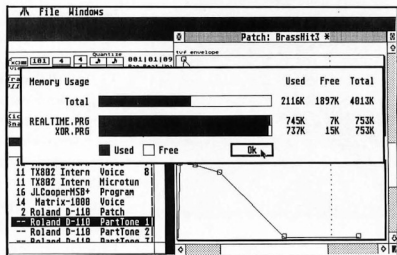
Current hardware drivers support the MIDI In/Out and RS232 ports. The latter is provided only with a special version of Intelligent Music's RealTime sequencer.

You can detach MIDI functions from the GEM manager if you want to run non-MIDI applications. The shell program lets you launch multiple programs individually, manage memory allotments and save a set of applications to automatically load and run on startup. MIDI-Tasking can automatically assign memory to each program or you can assign it manually. A graphic display called from the shell program (*Figure 1*) shows where and how memory is used among the system and active programs.

hardware devices, the ability to synchronize with internal or external timing sources, and simultaneous support of four software timers with different time bases.

Under standard GEM, MIDI

Figure 1.
A graphic display called from MIDI-Tasking's shell program shows where and how memory is used among the system and active programs.



operations occur on the same level as user-interface actions, which results in such unacceptable situations as a mouse-click taking precedence over playing a note. To get around this, many developers supplant existing GEM routines with their own optimized code. Under MIDI-Tasking, MIDI data are played in the background under interrupt control; user-interface actions can't get in the way. Programmers can be as fancy as they want without compromising critical timing factors.

applications to use as needed: 768 ppqn, 960 ppqn, SMPTE and millisecond. Even if you use a (relatively) slow hardware clock resolution, you can maintain software-timer accuracy by interpolation.

That MIDI-Tasking provides centralized timing control is critical. Under standard GEM there is a single hardware clock for applications. A typical sequencer program contains specialized code that is called every clock beat. But if you run two sequencers together, both get

confused and step on each other. Under MIDI-Tasking multiple clocks work concurrently.

Non-MIDI Uses

With MIDI-Tasking installed, you'll see multiple programs run at the same time, each in its own window. This is what is known as "round-robin" multitasking. Though you work in only one window at a time, all windows receive the processor's time to keep applications steadily running (although the screen displays in unselected windows don't get updated).

Non-MIDI programs work the same way as MIDI programs. In *Figure 3* PageStream and Master Plan happily co-exist. To switch between programs, either select an appropriate window or choose a program from the GEM shell-manager menu.

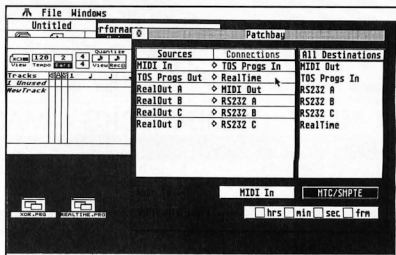
You cannot route non-MIDI data through the patchbay but you can exchange information through a system scrapbook. As applications get upgraded to use this feature, you should be able to cut/copy/paste between applications as you can already do with Multifinder on the Macintosh.

Going Forward

MIDI-Tasking is currently under heavy beta testing, as much to explore its capabilities as for developers to determine what changes will make their programs compatible. As you might expect, few programs run with little trouble — mostly due to problems with GEM. A demo version of the RealTime sequencer provided with the MIDI-Tasking package ran fine, as do more recent Dr. T's programs. All other MIDI applications I tested bombed.

Response from MIDI developers is good, particularly in the United States. The German giants C-Lab and Steinberg/Jones have invested considerable effort in their proprie-

Figure 2: MIDI-Tasking has handles for the MIDI In, MIDI Out and three RS232 MIDI Outs (for an external multiple MIDI-Out device), along with RealTime and general TOS applications.

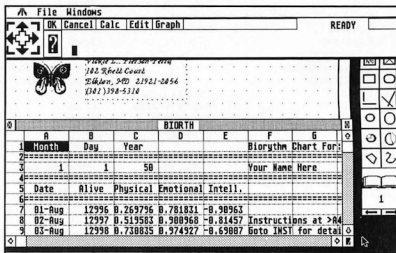


tary multi-application systems and are more interested in getting their systems to work under MIDI-Tasking than to make individual programs compatible.

The next step is for MIDI applications to dial into the MIDI-Tasking functions and provide handles for interprogram communication. Additional hardware drivers are needed for existing interface boxes.

The only market niche where Atari has any dominance. Apple has already released a similar system called MIDI Manager that runs in concert with Multifinder and provides similar if not greater capabilities than MIDI-Tasking. While Apple has not taken an aggressive run at the MIDI market, they have the necessary system in place, support of Macintosh MIDI developers and

Figure 3: PageStream and Master Plan happily co-exist under MIDI-Tasking.



After that, who knows? I'd like to see patchbay extensions to support real-time data manipulation such as filtering, rechanneling and controller remapping. A screen keyboard/controller to input MIDI data from your computer into ongoing applications would also be very nice.

The bottom line, however, is that Atari must get MIDI-Tasking out in a timely fashion and support it for developers. MIDI-Tasking cannot be treated as a luxury — it is rapidly becoming a question of survival in

Multifinder for non-MIDI needs. More importantly, Apple has taken a pro-active position to enforce compatibility among developers — an example of leadership that Atari needs to adopt. Atari must act and act now. ■

Jim Pierson-Perry is a chemical engineer, part-time musician and a registered Atari developer who lives in Elkton, Md. He is also START's MIDI/Music Editor.

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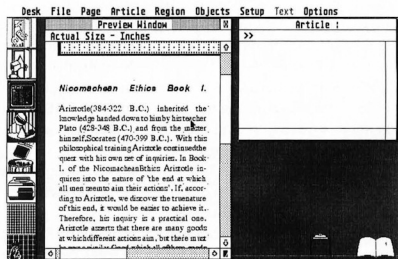
Deskset II

REVIEWED BY DAN FRUCHEY

AT A GLANCE

Product:	Deskset II
Type:	Desktop publisher
Company:	Atari Corporation 1196 Borregas Ave. Sunnyvale, CA 94086 (408) 745-2000
Price:	\$495
Requirements:	2MB, hard disk, Atari SLM804 laser printer
Summary:	A program that's bullet-proof, but lacking several key features.

A look at the basic desktop used by Deskset II.



Almost two years ago Atari announced the impending release of Deskset, a full-featured desktop-publishing program designed to meet the needs of commercial and home users alike. After a series of false starts, Atari has finally released a slicker version of the original program, Deskset II.

In Brief

The program is designed for the high-end market. As a result, the range of possible system configurations is limited. Deskset II requires at least 2MB with a hard disk and the Atari laser printer.

The installation accessory included with the program is by far the easiest I have ever used. All you have to do is specify the drive partition where you want Deskset II to go, and the paths for GDOS, fonts and files. (The fonts are not GDOS fonts; GDOS is used only to access the printer.)

Deskset II uses the ST's standard GEM interface and mouse functions. A series of icons on the left side of the screen let you access most basic features, including text and graphic creation, page preview and printing. There are two windows, one for editing regions and previewing pages, and another for editing text.

A clipboard and page flipping icon are in the lower right-hand corner of the screen.

What It Does

The primary building blocks of Deskset II are called primitives and regions. Before text and graphics can be added to a page, you have to create one or more primitives to indicate the destination of each component. When you define one or more primitives of the same type, they become a region, which is subject to its own rules.

Regions are especially powerful when text is linked to them, and lets you perform a number of special

effects. Here you can shape paragraphs and wrap text around graphics with a finesse that is unheard of in other publishing programs.

To fill text regions, import ASCII files or documents that have been converted to Deskset II's format via a translation utility. The program contains a text editor for simple editing.

Deskset II includes 16 resizable vector fonts taken from the Compugraphics library. While the commercial fonts included with Deskset II add a substantial balance to the purchase price they also guarantee clean, easy-to-read output. (*Editor's Note:* At the World of Atari show in Anaheim, Calif., last April, Elizabeth Shook of Atari Corp. stated that additional fonts would soon be available for about \$120 apiece. Call Atari for details.)

The present font package includes Times Roman, Triumvirate and Omega fonts along with their major style variations. A single style of Brush (decorative) and Pi (math symbol and dingbat) fonts are also included. You can adjust font sizes in half-point increments from five to 144 points and characters can be condensed or elongated.

Deskset II includes 16 resizable vector fonts

Standard options such as variable leading, letter spacing, word spacing and justification are available in Deskset II. You can supplement automatic hyphenation and kerning with manual overrides; your own specialized kerning pairs and hyphenation rules can be defined. Deskset II automatically prints headers, footers and page numbers in any location with any font or

Another sample showing a layout and word-wrap around graphics.



justification theme.

Graphic regions contain simple geometric shapes or polygons generated within Deskset II. They can contain any of the standard GEM fill patterns and use many line styles and weights. You can also load pictures from a variety of popular graphic formats including Neochrome (.NEO), DEGAS (.PI1-.PI3), image (.IMG) and metafile (.GEM).

When you load graphics, a "repeat mode" shows you how text and graphics should interact. Text can be placed within a single point (1/72 inch) of the graphic (wrapped around the shapes), overlay the graphic or sidestep the graphics altogether. In the special-effects department Deskset II has a definite edge over the competition.

Deskset II is highly configurable. The program lets you set separate default paths for fonts, graphics, documents and text. Up to 16 fonts can be set to auto load.

Standard U.S. and European page sizes are predefined for quick selection. You can view documents in four zoom modes that range from 50 to 200 percent. Printing is fast (under one minute per page) and Deskset II calculates the amount of space you need on a page, so nothing ever gets cut off.

What It Doesn't Do

While its special-effects capabilities

are impressive, Deskset II fails to meet most other needs of the desktop publisher.

First of all, Deskset II is bulky and complicated. I had to read the manual quite a bit just to perform such simple tasks as changing text attributes. Without the open manual literally by your side, it is impossible to even create a document.

The greatest drawback is the text interface. The text mode is neither friendly nor intuitive. You must perform every step manually. To import a simple block of text from an ASCII document, for example, takes a minimum of seven steps (competing programs require about three). And once in the program, you have to edit the ASCII text to remove unwanted carriage returns, insertion of formatting commands and adjustment of text styles, which equals a major waste of time.

To load text into Deskset II from a word processor requires a minimum of 15 steps. Before you even attempt a file conversion, you need to write a translation table for the format used by your word processor. The tables included with the program scrambled my sample word-processor files.

To change a single character from the base font to another requires that you use a tag function, which further requires at least nine steps (some adjustments require 20 steps

or more). Many changes require additional keyboard input and it is necessary to manually track font I.D. numbers and layout parameters.

Although the packaging claims

Deskset II's text mode is neither friendly nor intuitive.

Deskset II is a WYSIWYG (What You See Is What You Get) desktop publishing program, this is untrue. Normally, WYSIWYG lets you edit text and graphics with an immediate response. Deskset II, on the other hand, requires that you edit regions and then turn on Preview mode to see the results. If Preview mode is on while you're editing, Deskset II

comes to a virtual standstill. Each time you make a minor change, the program takes 15 to 30 seconds to redraw the page.

Compared to other publishing programs available for the ST, Deskset II is sadly lacking in options. There are no grouping functions, no text or graphic rotation modes, no alignment functions, no help menus and macro support is illogical and inadequate.

Conclusion

Atari has gone some distance to make Deskset II a viable product for the ST market. Unfortunately they haven't gone far enough. The procedures required to perform many basic layout steps are tedious, unnecessary and time consuming. Applications should simplify work, not complicate it.

At \$495 Deskset II is priced up to

three times higher than other desktop publishing software on the market. For the same price consumers can purchase a much more powerful program with an intuitive, user-friendly interface and still have money left over. Atari plans to occasionally bundle Deskset II with DTP systems. Very few users will turn down a free DTP program when they purchase a system but not many users will purchase this program separately. With Atari's history of limited software support I'm very skeptical about the future of Deskset II. If a major revision ever arrives I'll gladly eat those words. ■

Dan Frucbey is a paramedic who lives in Santa Rosa, Calif. He wrote the word-processor comparison for the April 1990 issue of START.

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COVER
STORY
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BRUMBAUGH

PLAYING

THE ATARI DEVELOPER'S GAME

If you like to program on the ST, you've probably wondered at one time or another if you could make a living at it. In the following article, START takes a hard look at the realities of developing software for the ST.

Developing software — and being successful at it — is like negotiating a twisting maze of options and hazards. Should you settle on the ST? Should you have a third party market your software, or do it yourself? What's the best way to be successful?

To help answer these questions, START talked to some of the ST's leading developers and publishers. Most of them have run the gamut from magazine, public domain and shareware products to third party contracts to starting their own company for distribution. Here's what they have to say.

Reality Check

Whether to go with the ST or move to another platform, such as the Macintosh, PC or Amiga, will be your first, most important decision. The harsh reality is that the ST user base in the United States is very small (about 120,000 according to numbers released by Atari) and thus generates smaller software sales. A recent study by the Software Publishers Association reports that software sales in North America totaled \$3,098,800,000 in 1989. The following is a breakdown of sales per machine:

IBM:	76.7%
Macintosh:	14.2%
Apple II:	4.3%
Commodore 64/128:	2.8%
All others:	2%
(includes the Amiga and the ST)	

Consider a few other facts: some

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A look at the risks and the rewards

of the best ST developers have moved on to other platforms. Major commercial software companies, such as Ashton Tate and Lotus, pay little more than lip service to Atari when it comes to porting their successful software, and the companies historically the staunchest supporters of the ST have drastically cut back on their new releases. Piracy, which makes much less financial impact on the PC and Mac worlds, can literally break an ST software startup. And Atari Corp. has a long-standing reputation for poor developer and dealer support.

Proceed With Caution

So, considering the size of the market and Atari's less-than-stellar reputation should you develop software for the ST? Some developers recommend caution. George Miller, product manager for MichTron, notes that while Atari is showing signs of making changes, at this point it's best to take a "wait and see" stance. "Develop ideas," he advises, "work on outlines, but don't jump in and expect to make a million dollars." Dave Small,

of Spectre GCR fame, warns newcomers not to expect support from Atari.

To compound matters, many people who buy an ST don't try new applications. According to Charles Cherry, head of TOS development for Atari, "The problem is that many people buy computers to do just one thing (such as desktop publishing or MIDI). They don't go to user groups, read magazines or even know there's more they can do with their machine."

Cherry says the developer program is addressing the problems for the domestic software market. "Everybody who buys a computer gets a three-month free subscription to all the ST magazines." The idea is to educate people and get them interested in doing more with their machine within the first six months of ownership.

Atari is also beginning to "internationalize" software. "Every [piece of software on the ST] should be available everywhere,"

Cherry says. To facilitate this, Atari will identify channels of distribution and let people know where these channels are. Equally important in the international market, Atari will help developers by making translator services available.

A Good Place To Start

Despite the problems in the ST market, most of the developers interviewed for this article agree it's a good platform to start out on. And most pointed to the same reason: the market's small size makes it much easier to break into. "The success of your program will be based on its merit," Cherry says, "not on how ▶



Buy a ST pay \$1,000

Buy a hard disk, pay \$750	On-line contacts fix bugs, advance 3 spaces	Put a program in the public domain, gain fame	Deduct business expenses from taxes, collect \$1,000	Release update as shareware, collect \$200	Hard disk crashes, go back 2 spaces	File legal work to become a small business	Canadians snap up shareware, collect \$600	Next idea a winner, apply for loan	Win a free trip to Comdex
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good the software marketing department is.

People will notice good software. Every ST magazine will do a new product announcement and will review a good, credible program."

Miller adds, "It's a great market to get into because there's a shortage of good programmers, but you'll have to support yourself from other projects. Don't expect to jump in and make a living there."

Some successful ST companies like ISD Marketing and Gadgets by Small have taken a different tack from the traditional approach of finding a need and filling it. They created their own need and their own market. ISD sells the two most sophisticated applications on the ST — Calamus and DynaCADD. Rather than rely on the ST market, says ISD president Nathan Potechin, "we're giving people a reason to buy an ST." And when it comes to niche markets, Mac emulator designer Small notes with satisfaction that "being a monopoly helps."

Which Way Now?

Once you have a product, you'll have to decide how to market it. You can either do it yourself, or have someone else do it. There are many advantages to going through a third-party publisher such as Antic or MichTron. John Holder of Marathon Computer Press points out that going through a third party can help you get your name established in the in-



dustry. "The best way to get started is to go through a software publisher and also to submit articles to ST magazines. Get some notoriety before attempting to launch a product on your own. Fifty percent of marketing is name."

According to Miller, whose main responsibility is to screen potential products for MichTron, the way to get a program noticed and eventually published is to maintain a professional image. "Make it bug proof — if it crashes a couple of times I'll lose interest. Enclose a good-looking cover letter that shows you're genuinely interested in our publishing it. I'll spend more time with a professional-looking package than one that looks amateur."

Although it's exciting to get an offer from a commercial publishing company, don't rush into a contract. Holder recommends that you negoti-

programs, fight it."

Charles Cherry looks at it another way. "Get the software companies to court you; they aren't doing you any big favor. Approach the company asking, 'What will you do to earn 80 to 90 percent of the royalties?' Approach everyone. Don't sign with the first offer and don't take rejection personally. You can turn someone down, then go back later. If the program has commercial potential, people will be bidding for it."

Noncommercial Alternatives

If you're finding it hard to be objective about the potential of your program, you might consider putting it in the shareware market to see how people like it. If the program gets a good response, you'll know it will be worthwhile to upgrade it and rerelease it commercially. Not inconsequentially, shareware programs can make a profit.

The successful shareware developers agree on one point: To be successful, you must treat the program as if it is commercial. Darek Mihoka, author of the popular 8-bit emulator ST Xformer, points out that when a programmer puts out the software and then doesn't support it, people forget about it. "Release the program on CompuServe and GEnie. Send review copies to magazines. Advertise it as a commercial product. Be good about updates."

How well you support your shareware program will affect how many people register their use of the program. "To sweeten the deal," John Holder recommends, "send users documentation in return for shareware registration." Keep in mind that even though your share-

People will notice good software.

ate, taking into consideration both the appeal of your product and what the company has to pay for marketing. "Read contracts carefully. It may take a couple revisions to get it right. If you don't want to give up, for example, exclusive rights to future

Users clamor for update	Software publisher accepts latest program	Atari sales fizzle at Christmas, go back 4 spaces	START reviewer loves program, advance 3 spaces	Establish on-line support, sales jump 15%	Program crashes under new TOS, lose a turn	Install memory upgrade, pay \$300.	Become START columnist, gain fame	Quit job to program full time
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ware program took as much work to write as a commercial program, not everyone will see it that way. Since shareware is on the honor system, many people simply don't send in their registration fee. Take this into consideration when you anticipate how much money a shareware product will make.

The Long Haul

If you are committed to selling your product, and keeping the high percentage of royalties that would normally go to a publisher, you can always start your own company and market and distribute the program yourself. "[Starting your own company] is a major investment in time and money," says Charles Johnson, CodeHead founder, "but in the long run the potential for profit and control is attractive if you're willing to put the time and energy into making it happen."

Many people start their business after a stint in the shareware market. Darek Mihoka's company, Branch Always, was started in just three days. "The advantage was we already were shareware; we already had STs, manuals, etc. Advertisements cost the only real money."

If you're starting a new company, says Small, "You have to have the time to do all this stuff and do it right. It's going to be rough if you've got an eight-hour a day job." So what's the best way to "do it right?"

"Think global," says Small. "The U.S. market is just not enough to live off. We ship half our product to Europe.

"Help users out. We send out free updates; last time it was thousands of dollars worth of mailings. From a marketing standpoint it's expensive, but it's worth it for customer loyalty."

Charles Johnson urges you to maintain a good online presence. "It helps to build a reputation of being accessible and responsive to problems. CodeHead's done demos of most of our programs, which is a good route if it's possible for that program. A demo takes away the 'last rational for piracy,' that people

pirate to preview software before they pay money.

"You have to advertise, or people won't know about you. Promote, get review copies out to people who matter. Publicize the product and get it known.

"Be willing to admit

if you make a mistake. If

there's a bug be sure to fix it right away. Companies with the best reputation are like that. Look at things from the standpoint of the user."

Getting Help

Charles Cherry strongly recommends you register as a developer with Atari. "Atari can help you write programs 'correctly' for future versions of TOS. We can help you market and target market segments; this also helps Atari sell to niche markets." As a developer, you can schedule time

to use Atari's booth at trade shows, advertise in the dealer newsletter and receive a discount on hardware.

Cherry is also heading up a new program called Atari Softsource, a database on GENie. This worldwide listing contains software demos, pictures and text of all the software available for the ST. Developers update their own listings. Softsource will go on CD-ROM every quarter and be sent to dealers. Softsource is scheduled for a Christmas release to the general public.

Being a registered developer also makes you eligible to join the Independent Association of Atari Developers, formed as way to strengthen developers and help to market products more effectively. The IAAD claims 90 percent of North American Atari commercial developers as members and maintains a private forum on GENie. To contact the IAAD, send a message to their GENie address PERMIT\$. .

Good Luck!

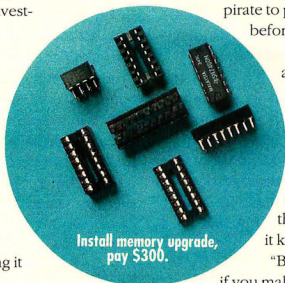
Charles Johnson closed his interview with this advice to programmers, "Drink plenty of milk. Stay away from corn nuts." Corn nuts? "Corn nuts. They'll crack your teeth." ■

Heidi Brumbaugh is the former Programs Editor of START Magazine.

Atari Developer's Kit

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OF BOMBERS, BLOCKS AND DREAMS

In which Anderson plunges, Plotkin plots and Cushman plumbs the pipes

FIGHTER BOMBER REVIEWED BY GREGG ANDERSON

AT A GLANCE

Game:	Fighter Bomber
Company:	Activision Distributed by Sideline Software 840 N.W. 57th Court Ft. Lauderdale, FL 33309 (800) 888-9273
Price:	\$35
Summary:	Best flight simulator to come along since Falcon.

Since the release of Falcon almost two years ago, nothing has even come close to challenging its lofty position. Until now. In Fighter Bomber by Activision (United Kingdom), you compete for the Curtis LeMay trophy in the Strategic Air Command's annual Bombing Competition.

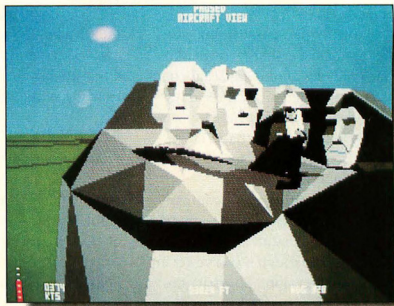
Flying High

Fighter Bomber is an outstanding example of advanced vector graphics. Each aircraft is equipped with a full control panel, including a target acquisition system that guides you to your ground (or air) target. There is a wide range of offensive and defensive weapon systems available to let you customize your plane for each mission.

Though it's a little light on weaponry, Activision's Fighter Bomber offers something new in the way of flight simulators for the ST.

Unfortunately, nothing is perfect and that includes Fighter Bomber. My first gripe is with the documentation, which consists of a command card, some propaganda leaflets and the owner's pamphlet. There are absolutely no instructions for flying the aircraft, air-to-air combat, bomb runs, landings, or even just taking off.

continued on page 49



CUBASE

Pro-Level MIDI Sequencer

BY DAVID SNOW

AT A GLANCE

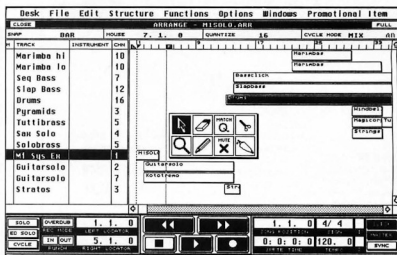
Product:	Cubase version 1.5
Type:	MIDI sequencer program
Company:	Steinberg/Jones 17700 Raymer St., Suite 1001 Northridge, CA 91325 (818) 993-4091
Price:	\$495
Requirements:	1MB RAM, monochrome monitor
Summary:	A complete sequencing package that's more than worth the high price.

Advancess in hardware and software design fuel the technolust of power-mad computer jocks. Once you've laid hands on a product that makes your work faster or more intuitive, it's very painful to go back to the older ways. That's my gut response to Cubase, Steinberg/Jones' entry in the pro MIDI sequencer race. Cubase combines the best of several sequencing styles into a logical and efficient graphic environment.

The program requires a monochrome monitor and at least 1MB of RAM. The included optional M-ROS (MIDI Real-time Operating System)

multitasking system requires two or more megabytes to load more than one program. The current version of M-ROS even supports programs not specifically developed for it and comes with a switcher program to configure and launch multiple

Figure 1: The Arrange window in Cubase handles basic recording and shows the current Track List and Part Display.



applications. (Editor's Note: See Jim Pierson-Perry's article, *Multitasking on the ST*, elsewhere in this issue for more information on multitasking). Steinberg/Jones programs employ cartridge-port hardware keys for copy protection. Using Cubase with similarly protected programs requires their cartridge port adapter to accommodate additional keys. For this review, I used a 1MB system and evaluated Cubase solely as a stand-alone program.

Cubase version 1.5 sports a number of enhancements over the original release version: a new editing window, a new quantization type, an Auto Save function, support for Monitem's 19-inch monochrome monitors, and a built-in mouse

accelerator. In addition, Steinberg/Jones has corrected compatibility problems with GDOS and TOS 1.4 (though it's still incompatible with the popular PinHead system accelerator program from CodeHead).

For the Record

Despite its complexity, Cubase's superbly designed user interface makes it easy to get up to speed. Cubase windows are similar but more sophisticated than standard ▶

GEM windows. You can open up to seven windows and, in addition to horizontal and vertical scrolling, the contents of a window can be magnified or reduced in size. Click the right mouse button to invoke a pop-up "toolkit" menu to change the function of the mouse pointer. You can activate many program functions either with the mouse or the keyboard.

Cubase emulates a multitrack tape recorder as its basic model. An arrangement can hold up to 64 tracks, and four tracks can be recorded simultaneously. You can handle recording and playback through a screen transport bar or by remote control from a MIDI keyboard. Counters in the transport bar display song position and SMPTE time, current tempo, time signature and loop points.

Extensive real-time editing control sets Cubase apart from the competi-

tion — virtually all program operations are active "while the tape is rolling." The Arrange window (see *Figure 1*) handles basic recording and shows the current Track List and Part Display. The Track List holds the names, instruments, MIDI channel assignments and drum map status for each track. You can add or delete tracks from the list at will. Recording options include overdub/replace mode, automatic/manual punch mode and normal/cycled (looped) recording.

Parts is Parts

Recording a musical segment of any length creates a "part," the basic music structural unit in Cubase. Parts appear in the Part Display region of the Arrange window as a rectangular bar assigned to the track you are using. The part is not locked to that track; you can move or copy a part to any position in any track by clicking

and dragging it with the mouse. Other part editing features include split, append, merge, overlap and delete. Any number of parts from the same or different tracks can be grouped and handled as a single entity, making it easy to manipulate musically related material. One particularly useful option is the creation of "ghost parts," linked copies of an existing parent part. Edit the parent part and you change all the linked ghosts.

Double-click on a part to call up a dialog box where you can alter playback properties of that part. Cubase makes these changes on the fly, without affecting the original recorded values, so you can safely experiment. Playback options let you transpose pitch; alter and compress velocity; and enable/disable program change and MIDI volume, time-delay and filter controller data. You can modify playback parameters for a

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Address 1: <input type="text"/> <input type="text"/>						
Address 2: <input type="text"/> <input type="text"/>						
Address 3: <input type="text"/> <input type="text"/>						
City, St, Zip: <input type="text"/> <input type="text"/> <input type="text"/>						
Phone: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>						
Category: <input type="text"/> <input type="text"/>						
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single part, all parts on a track or over an entire arrangement.

Each track is assigned a MIDI channel and an output port (the ST internal port, unless an optional Steinberg/Jones hardware adapter is used). All parts in a track play on this designated channel unless it's set to the "No" value, in which case they play on the channel from which they were originally recorded. You can also pipeline track playback to other active M-ROS applications.

All parts in an Arrange window constitute an arrangement. You can open several Arrange windows at the same time and copy, cut and paste between them. An arrangement can be handled as a complete piece of music or as a section of a piece. At the largest structural level, all open Arrange windows constitute a "song." A song can be a single piece of music or a set of individual pieces, depending on how you treat arrangements.

You can save and load songs, arrangements and parts as individual disk files.

It's All in the Timing

Cubase has a timing resolution of 192 ticks per quarter note. You can set Cubase to derive timing from the

sent out as MIDI note messages to a suitable instrument (e.g., a rimshot on a drum machine). A "Human Sync" option lets you control tempo in real-time while playing or recording; tempo is calculated by comparing the timing of incoming notes to a user-definable rhythm mask. To get

Despite its complexity, getting up to speed with Cubase is easy.

internal M-ROS clock, external MIDI clock or external SMPTE (via incoming MIDI Time Code or optional hardware SMPTE interface). Cubase simultaneously transmits MIDI Time Code and/or MIDI Sync messages (MIDI clock, start, stop, etc.).

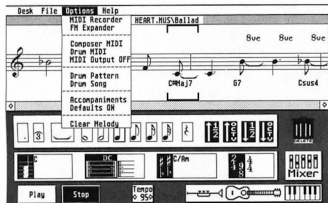
The built-in metronome can beep through the monitor speaker or be

appropriate Human Sync parameter settings can be tricky, but it works and is uncannily responsive.

Cubase offers a wide selection of quantizing algorithms, all of which can be undone unless specifically frozen for a part, track or arrangement. Quantization values are graded to standard duplet and triplet ▶

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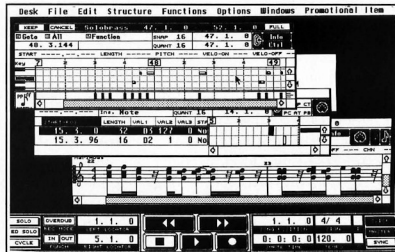
note values (no quintuplet or septuplet groupings), ranging from a dotted whole note to a sixty-fourth note triplet. Variations include: standard autocorrection of note start times, intelligent autocorrection retaining the "feel" of your playing, iteratively nudging notes toward a time grid, analytic quantization that distinguishes between duplets and triplets, matching the feel of one part to another and matching a part to a pre-defined rhythmic map. You can create your own "groove map" for this purpose, or select one supplied by the program.

Other useful features include input filters that block particular categories of MIDI data, redefining incoming MIDI controller data from one type to another, plus MIDI Thru and Running Status toggles. A MIDI Processor is available to create echo, chorus and pitch-shift effects in real-time.

Song files from the Steinberg/Jones Pro 24 III Sequencer are upwardly compatible with Cubase. It

much mastered them all. All edit modes support step-time entry and cut/copy/paste/undo. With the exception of Grid Edit, all can take multiple parts into one window. You can record from any edit window and toggle from one window to another while playing or recording. Data edited in one window is automatically updated in other open windows. Changes made within an edit window do not get finalized until

Figure 2: Cubase offers four conventional edit modes, each with its own window format: Grid Edit (event list with graphic display), Drum Edit (time-grid), Key Edit ("piano roll" display) and Score Edit (standard musical notation).



you close the window.

A fifth edit mode, Logical Edit, modifies parts and tracks according to specified logical test conditions (e.g., set all occurrences of a specific pitch in a part to a selected velocity). Logical Edit requires familiarity with the nature of MIDI data in order to be useful, but is great for experimentation and makes a convenient editing tool.

The Dynamic MIDI Manager is a "virtual mixing console" of graphic faders, dials, switches and numeric displays which are programmable to transmit any kind of MIDI data in real-time. It is primarily for control of volume, panning, timbre or similar parameters. You can record output either as a static "snapshot" or a dynamic stream of MIDI data. Selection and function of graphic objects in the MIDI Manager are user-definable and may be saved to disk. The program comes with an assortment of MIDI Manager "maps" customized for some popular synths.

Cubase comes bundled with the Satellite patch editor/librarian utility which transmits and receives patch dumps, either singly or in banks. Satellite edits patch files following the format used in the Steinberg/Jones Syn্থworks series of patch-editor programs. A Macro Editor with sliders tweaks parameters for the DX/TX7, TX802, D50, ESQ-1/SQ-80, D10/20/110, MT32, K1 and M1 synths.

But Does It Do Dishes?

Any sequencer with this range of capabilities would have much to recommend it. Its friendly and efficient graphic environment makes Cubase all the more attractive. The manual is excellent, with many illustrations, a comprehensive index and a chapter on MIDI basics for beginners. As for bugs, I encountered no lock-ups or bombs (multiprogram operation under M-ROS was not tested for this review, however). If you've got the bucks, Cubase is highly recommended. ■

David Snow holds degrees in music composition from the Eastman School of Music and Yale University, and is the recipient of numerous commissions, awards, and grants, including those from BMI, ASCAP, and the National Endowment for the Arts. This is his first review for START.

Cubase combines the best of several sequencing styles.

also reads MIDI Standard Files (formats 0 and 1) and can write format 1 MIDI Files.

In the Cutting Room

Cubase offers four conventional edit modes, each with its own window format (see Figure 2): Grid Edit (event list with graphic display), Drum Edit (time-grid), Key Edit ("piano roll" display) and Score Edit (standard musical notation). These windows operate in a similar fashion — master one and you've pretty

continued from page 44

limited. The internal cannon, gravity bomb, Sidewinder air-to-air and Maverick air-to-ground missiles are the only weapons available with targeting systems. The remaining laser-guided Paveway bombs, HARMs, Durandals and rocket pods have no viable targeting system and as a result, are about as useful as poorly thrown rocks.

As in any realistic air combat simulation there have to be other aircraft for you to fight and, hopefully, shoot down. The opposing aircraft in F-15, Jet, Falcon and even GunShip all fly in a logical fashion as they attempt to shoot you down and avoid being shot in the process. Not so with Fighter Bomber. Since you're not given the option to pass, you have a 95-percent chance of having one or more interceptors attacking you on each mission. They appear out of nowhere, zoom in at 970 knots, fire off a missile or two and then stick on your tail like glue. This is the least of your problems, however; if they miss you with a missile, they try to ram you out of the sky. The artificial intelligence routine that controls the interceptors is extremely poor. The interceptors don't dogfight, they don't maneuver around you, they don't do anything but zoom in and ram! These kamikaze interceptors are, above all, what turns Fighter Bomber from a shining jewel to a flawed gem.

I'm not saying Fighter Bomber can't be won - you just have to be careful and lucky. I suggest starting with a fast, powerful and maneuverable aircraft like an F-15. Always load up with Air-to-Air missiles and Mavericks whenever possible. Fly with your Sidewinders active and the radar at its maximum 25-mile range at all times (unless you're starting a bomb run). Respond immediately to an attacking interceptor by lining up a head-on shot and firing a Sidewinder at it (unrealistic or not you've a good chance of hitting it that way). Keep your air speed up when landing and don't let it drop to stall or you're history. And beware - interceptors love to jump on landing aircraft so keep your eyes and ears open.

The Final Score

The final score for Fighter Bomber is a mixed bag. It's a fantastic program if you can solve or avoid the interceptors, but a study in frustration if you can't. If you're into graphically accurate flight simulators, Fighter Bomber is worth having (I'm keeping my copy). But if you're new to combat simulations or just lack patience, I suggest you leave it in a holding pattern.

continued on page 52

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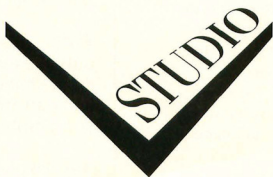
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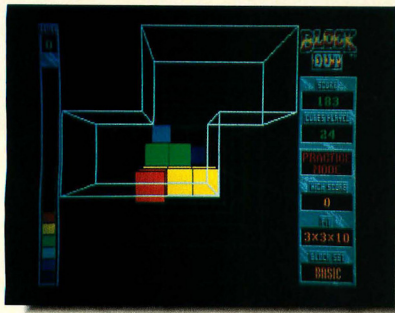
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How are your spatial relations? Test yourself in Blockout, California Dreams' answer to Tetris.

Level, for instance. Pipe Dream uses an exceptionally annoying code—wheel copy protection that lets you start playing even if you entered the wrong code. Just when you've gotten into your game, you'll be informed that you entered the wrong code, and must reboot and try again. There's no way to correct the code if you make a mistake while entering it, either. All you can do is reboot.

I also had occasional trouble with the joystick locking up after switching between control modes. No problems crop up while actually playing the game, but these few small bugs make the programming seem a little shaky.

Overall, I found the game addictive enough to keep me returning time and again to try for a higher score or a higher level. But for its excessive cuteness and minor glitches, I'd rate this as a classic strategy game, right up there with Qix and Tetris. Fortunately your attention's going to be focused on those pipes, not the pretty colors and relentlessly cheerful music. With all its color and non-violent emphasis on planning and spatial perception, Pipe Dream makes an excellent game for children—and a challenging and addictive one for adults.

Blockout

REVIEWED BY DAVID PLOTNIK

continued from page 49

Pipe Dream

REVIEWED BY CAROLYN CUSHMAN

AT A GLANCE

Game:	Pipe Dream
Company:	Lucas Film Games Distributed by Electronic Arts 1820 Gateway Drive San Mateo, CA 94404 (800) STAR WAR (782-7927)
Price:	\$39.95
Summary:	Cutesy graphics don't dull a game demanding intense concentration and sharp thinking under pressure.

Pipe Dream pits you against one of the most horrifying opponents imaginable—sewer sludge, or in this case, the dreaded flooz. As plumber in charge, you must pipe this gunk away as it flows from its source. You've got a well-filled pipe rack, with a variety of shapes (elbows, straights, and cross pieces) to place on the gridded playing field. Unfortunately, you can only take the bottom piece in your dispenser, whether it fits your pipeline or not. A timer gives you a head start, but once the flooz starts moving you'll find yourself frantically fitting together whatever pieces come up. Using the joystick, mouse or

keyboard, position the cursor where you want the next piece to go, and then press the appropriate button to set the pipe in place. The joystick worked best for me, with keyboard next. Mouse control seemed to drag a bit.

To get to the next level you have to pipe the flooz through a specified number of pipe lengths. As the levels get higher, so does the number of pieces you have to connect. The flooz flows faster and obstacles start to appear on the field. For every four levels you finish, you get a bonus screen and a password. The brightly colored backgrounds also change, some almost starkly utilitarian and others humorously fishy, with the vivid flooz going from fluorescent green to yellow to Pepto-Bismol pink. Fortunately, a training mode with super-slow-flowing sludge lets you get started easily. For competitive play, Pipe Dream provides Basic One—Plumber and Expert One—Plumber modes. In Two-Player mode you must work with your opponent to keep the flooz moving, and at the same time try to get the flooz to go through more of your pieces than your opponent's.

The manual gives a lot of useful tips, but skips on some subjects, not even mentioning the Bonus

AT A GLANCE

Game:	Blockout
Company:	California Dreams Distributed by Electronic Arts 1820 Gateway Drive San Mateo, CA 94404 (800) STAR WAR (782-7927)
Price:	\$39.95
Summary:	The most addictive puzzle game since Tetris.

Just when you thought you had finally mastered Tetris, along comes Blockout from California Dreams. Like Tetris, the idea of Blockout is to fill an empty rectangular column with falling blocks. The difference is dimension; the Blockout screen is in 3D.

You have an aerial view of the column (or pit), which is like an empty skyscraper that you're trying to fill with floors. You build the floors with falling blocks. If you complete a floor without holes, the floor will disappear and everything above it will drop down one level. If you leave holes, the floor does not disappear and the holes begin to stack up, leaving you with less time to position the falling blocks. When the stack reaches the top, the game is over.

Choose your difficulty level from three sets of blocks. The Flat set consists of no more than four shapes of 2D squares; the Basic set contains four shapes of 3D cubes; and the Extended set can have up to five 3D shapes and requires genius to master.

To further challenge you, the dimensions of the pit can change. You can select Custom Pit Dimensions and Rotation Speed for the blocks themselves. The ability to set up configurations makes Blockout endlessly challenging.

The graphics are sharp and the game has a bouncy sound track. Blockout is not copy protected and will install on your hard drive. When you first boot up, however, you're asked for the color of a particular cube in a specific block, which can be something of a pain but, I guess, a necessary evil.

Overall, Blockout is well-crafted and very playable. You'll find yourself coming back again and again to better your last score. But be warned: If you thought Tetris was tough and addicting, wait until you try Blockout.

The Advanced Gravis MouseStick

REVIEWED BY DAVID PLOTKIN

AT A GLANCE

Product:	Advanced Gravis MouseStick
Company:	Advanced Gravis Computer Technology 1602 Carolina St., Suite #D-12 Bellingham, WA 98226 (800) 937-0062
Price:	\$99.95
Requirements:	512K
Summary:	A viable alternative for mice and joysticks, if you need one.

The Advanced Gravis MouseStick is an ST controller that can replace your mouse, joystick or both. It's easy to connect and use, and can be configured for a host of options.

The Mouse and the Stick

The MouseStick actually consists of two units: the stick itself and the Gravis Mouse Processing Unit (GMPU). The stick is mounted on a wide, stable base with rubber feet, and is connected to the GMPU, which plugs into your joystick or mouse port. There are two fire buttons on the base and one on top of the stick.

You can set the base fire buttons to emulate your right and left mouse buttons, or to emulate your left mouse button and activate the MouseStick editor.

The Mouse Editor

The editor lets you configure the MouseStick and includes a variety of options. Since the GMPU has only a single-line LCD display, however, programming it is slow and somewhat tedious. You can save up to four configurations (three plus the default configuration).

Enter the editor for a true test of your trigger finger; you have to push the designated editor button three

times fast and hold it down on the last press. The editor gives you a list of options the most complex of which is RECALL A SETUP. Besides letting you recall any one of the four configurations, it lets you set the MouseStick for AUTO CENTERING, VECTORING, COMBINATION or JOYSTICK modes.

AUTO CENTERING gives you direct control over the mouse pointer and returns the pointer to the center of the screen when you release the stick. In VECTORING mode, the pointer position glides across the screen in the direction of your stick handle's movement. COMBINATION mode provides a combination of AUTO CENTERING (when the stick handle is upright) and VECTORING (when it's moved left and right). JOYSTICK mode sets the MouseStick to emulate a standard eight-position joystick.

PROGRAM A BUTTON option allows any of the three buttons on the MouseStick to be set in TURBO FIRE mode. This is handy for some games, although rapid fire attachment for joysticks are sold at most toy store for about five dollars.

Where's the Cheese?

The Gravis MouseStick is a powerful alternative controller that includes a whole lot of options - if you need them. But quite frankly, I find it much easier to simply manipulate my cursor with a regular old mouse and play games with an eight-position joystick. But you may feel differently. If you've been looking for these features, then you'll definitely want to check it out. ■

Gregg Anderson is in the Air Force, currently stationed at Ellsworth AFB. Carolyn Cushman is the Associate Editor of Antic magazine. Contributing Editor David Plotkin works for Chevron U.S.A.

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METAMORPHOSIS

Tween The Easy Way

ARTICLE BY DAVE STUART
PROGRAM BY MARK KIMBALL

AT A GLANCE

Program:	Metamorph
Type:	CAD-3D desk accessory
Requirements:	CAD-3D version 2.0 Cyber Smash, 1MB, high or medium rez
Arcfile:	MORPH.PRG
Files:	ANIMATE3.PRG META.BAT CADDEFS.H META1.C FATALS VROLAK.SEQ META.ACC
Language:	C and assembler

Known as Metamorph, META.ACC is a metamorphic animator, which allows you to change the shape of an object during the animation. It's strength is that it works visually instead of by coordinates. Smooth deformations like stretching, scaling or bending the object, heretofore difficult, are easily achieved. Specify a starting and ending picture and Metamorph generates the frames in between, a process known as tweening.

An example of this is on disk, in a file named VROLAK.SEQ. VROLAK depicts a flying bat. Metamorph was

used to tween the frames of the flapping wings since flapping is a process of smooth deformation—the number of faces and vertices of the wings remains the same, but their positions change.

This article discusses tweening, using VROLAK as an example. (For specific instructions on how to use Metamorph, read the sidebar "1-2-3 Tween.") To view VROLAK.SEQ double-click on the archive file MORPH.PRG, and choose Extract when the dialog box appears. Select a destination disk and the files will be un-ARCD directly onto that disk. In low or medium resolution double-click on ANIMATE3.PRG then select VROLAK.SEQ. ANIMATE3.PRG will run on a 512K machine; [Spacebar] pauses the animation, [Return] restarts it and [Undo] exits ANIMATE3.

VROLAK's Origins

Since Metamorph runs under CAD-3D version 2.0, this article assumes a working knowledge of that program, as well as familiarity with Antic Software's Cyber line.

The core of the VROLAK animation was created by Lee Seiler using NeoChrome, then mapping the 2D image onto a flat plane in Cyber Texture. Liking the artwork, I decided to animate it using the little-

known META.ACC.

Using Cyber Sculpt's Rotate function I made a set of four .3D2 pictures with the wings in various phases of flapping. Viewed in sequence the pictures showed one downsweep (or upsweep) of the wings. These were my key frames, named B1.3D2, B2.3D2, B3.3D2 and B4.3D2.

At this point I could have viewed the frames in Cyber Paint, creating a rudimentary animation by flipping between them. The action would be very jerky, however, due to the large displacements necessary to move the wings through one downsweep in so few frames. But the effort required to use Cyber Sculpt to create 30 frames depicting the downsweep would be enormous and tedious. This is where Metamorph came in. It easily created the between frames, resulting in a smooth animation with much less effort on my part.

Enter Metamorph

The next step was to create a Metamorph script file (see "1-2-3 Tween"). I wanted the resulting animation to show one complete cycle of flapping wings—down then up. The number of frames used for tweening determined how fast the wings flapped; the fewer the frames, the faster the

flap. After trial and error I settled on 30 frames.

Here is the control file:

```
load b1.3d2
load b2.3d2
5 frames
begin a:\bird
doit
load b2.3d2
load b3.3d2
5 frames
doit
load b3.3d2
load b4.3d2
5 frames
doit
load b4.3d2
load b3.3d2
5 frames
doit
load b3.3d2
load b2.3d2
5 frames
doit
load b2.3d2
load b1.3d2
5 frames
doit
stop
```

I saved this file as BIRD.CTL.

CAD-3D and Metamorph In Concert

I started up CAD-3D version 2.0, with *continued on page 63*

1-2-3 TWEEN

BY MARK KIMBALL

The Metamorph desk accessory works under CAD-3D version 2.0, which, in turn, requires at least 1MB of memory and runs in high or medium resolution. The Cyber Smash desk accessory also should be installed.

To install META.ACC, double-click on the archive file MORPH.PR.G. and choose Extract when the dialog box appears. Select a destination disk and the files will be un-ARCDed directly onto that disk. Copy META.ACC to the root folder of your boot disk. The next time your computer boots, the accessory will be installed.

When you're in CAD-3D and ready to use Metamorph (see "Metamorphosis" for an explanation of how Metamorph and CAD-3D interact), left-click on the Metamorph option under the Desk menu. Select the desired script file, which is simply a list of Metamorph commands.

Script Language

Scripts are ASCII files that can be created by a word processor

before entering CAD-3D, or by using the Flash Capture buffer, or by using the script function in Cyber Control. Any filename is valid; the default extension is .CTL.

The script language consists of five commands. Metamorph is case sensitive about commands, so be sure they are in lower case.

1) begin path\filename:

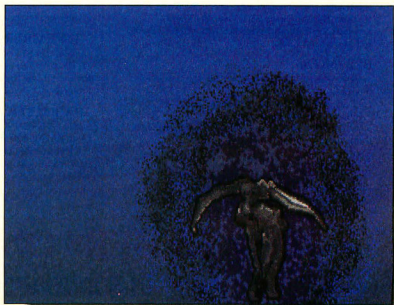
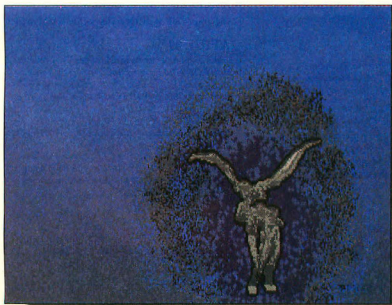
Filename is the name of the Metamorph output files, a .DLT and .Pix file. Tells Metamorph the path and filename of the output files. Don't include an extender; CAD-3D will supply one.

2) doit: Begin tweening.

3) **xx frames:** The total number (xx) of tweening frames.

4) **load filename:** Filename is a key-frame .3D2 file. Tells Metamorph to load the specified key-frame file. Include the file's .3D2 extension. Filenames are not case sensitive.

continued on page 63



VROLAK owes its smooth flying to Metamorph's tweening.

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BEGINNING BLITTER

BY SAMUEL STREEPER

AT A GLANCE

Program:	SBLIT
Type:	Tutorial
Requirements:	512K, high or medium rez
Arcfile:	BLITTER.1.PRG
Files:	EX1GFA.LST SBLIT.C EX1GFA.PRG SBLIT.PI2 EXAMPLE1.C SBLIT.PI3 EXAMPLE1.PRG SBLIT.PRG SBLIT.DOC
Language:	C and GFA BASIC 3.0

The blitter functions offer the programmer a convenient way to move and manipulate graphic data. These functions are built

into GEM on every ST, so the following programming techniques work on every ST. Additionally, Megs have a graphics-accelerator chip, known as the blitter chip. If you take advantage of the blitter routines when writing your program, it will run much faster on a blitter-chip machine.

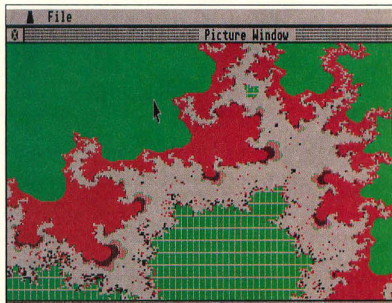
What Are The Blitter Routines?

The blitter routines move or combine rectangular blocks of data from one area of memory to another. Common

blitter applications include scrolling the screen or the contents of a window, and animation. What makes the blitter routines so useful is they just as easily scroll a region horizontally or diagonally as up or down; all you need to change are the corners of the destination rectangle.

Note the term "rectangular" in the preceding paragraph. Although 32,000 bytes of contiguous memory (think of it as a line 32,000 bytes long) is needed to store a typical ST screen, when it comes to graphics it is much more convenient to deal with screen memory as a 640x400 pixel (or 640x200 or 320x200) rectangular region.

By setting up the MFDB, predefined bitmaps, like this DEGAS picture file, can become the background screen.



MFDBs

In order to use the blitter functions you must describe the area of memory that stores information about the rectangular region (the blit's source) and the area of memory that stores information about the rectangular region (the blit's destination). That description – starting address, length in words, size of region in pixels, number of bitplanes – is called a memory form definition block, or MFDB. The major advantage of using an MFDB is that your program will be able to blit correctly in any screen resolution.

If both the source and destination rectangle are the same, only one

MFDB is necessary. This occurs frequently; often the screen serves as source and destination. Fortunately, TOS keeps track of the screen in memory, and both C and GFA BASIC provide built-in functions to help you create access the screen's MFDB information.

If you wish to blit a predefined bitmap, like a DEGAS picture file, you will need to set up its MFDB yourself since there isn't a built-in function to help you. These MFDBs are usually hardcoded. The information you need can be found within the specifications of the picture file. For example, DEGAS low-resolution pictures are 320x200 pixels with four bitplanes. That information gives you four of the five MFDB parameters. Since you must allocate a region of memory and read in the DEGAS picture, you know the fifth parameter, the starting address, is the same as the address of the first byte of the storage array.

To blit you also must set up an array of eight integers describing the subregion within the source rectangle which is to be moved and the subregion within the destination rectangle to which to move it. These subregions are measured relative to the boundaries of the rectangular region defined by the MFDB; (0, 0) is the upper righthand corner of the rectangle. Make sure the array values are positive and contained within the rectangle; unpredictable results will occur if the blitter routines are requested to blit outside the rectangle.

The Generic Algorithm

Any blitter program you write will follow this general algorithm:

- 1) define variables for the source and destination MFDB, and the subregion array;
- 2) (screen only) call the built-in routine to open a virtual workstation, which allows access to the parameters needed by the MFDB;
- 3) set up the MFDBS. In the general

- case, set up two – one each for the source and destination rectangle. Only one is needed if the source and destination are the same;
 - 4) calculate the displacement of the blit and fill in the subregion array;
 - 5) choose a write mode describing how the source and destination subregions will be combined;
 - 6) call a built-in routine to do the blit.
- On your START disk are two

for the upper left corner of the destination region, x and y coordinates for the lower right corner of the destination region.

In C, we pass the blitter call the variable **write_mode** which tells GEM how to combine the source and destination graphic blocks. In GFA BASIC, we do the same thing by putting **write_mode** as the ninth element in the **corners** array. Since

It's just as easy to scroll a region horizontally or diagonally as up or down.

examples that demonstrate the algorithm above. These two demos, EX1GFA.PRG and EXAMPLE1.PRG, in GFA BASIC 3.0 and C respectively, move the letter A horizontally, vertically and diagonally, in five-pixel increments. To run the demos, double-click on the archive file BLITTER1.PRG and choose Extract when the dialog box appears. Select a destination disk and the files will un-ARC directly onto that disk. The programs run in high or medium resolution.

The complete source code to these examples can be found in the files EXAMPLE1.C and EX1GFA.LST.

Let's analyze the examples. The C code declares the variable **screen** to be of type **MFDB**, which is a memory form definition block and is defined in the header file GEMDEFS.H. In GFA BASIC we use an array of long integers for the same function, hence the line **DIM screen%(8)**.

Corners is an array of eight integers describing the subregions to blit from and to within the source and destination rectangles. The integers represent, in order: x and y coordinates for the upper left corner of the source region, x and y coordinates for the lower right corner of the source region, x and y coordinates

we start counting at zero, the ninth element is **corners%(8)**.

We set **write_mode** to three because we just wanted to move the source area to the destination, ▶

WRITE MODES

S = source pixel
D = destination pixel

Write mode Destination gets

0	0 (all black)
1	S AND D
2	S AND (NOT D)
3	S (replace mode)
4	(NOT S) AND D (erase mode)
5	D (destination unchanged)
6	S XOR D (exclusive OR mode)
7	S OR D (combine mode)
8	NOT (S OR D)
9	NOT (S XOR D)
10	NOT D
11	S OR (NOT D)
12	NOT S
13	(NOT S) OR D
14	NOT (S AND D)
15	1 (all white)

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BLITTER

overwriting the previous contents of the destination. There are 16 available write modes, which are listed in the sidebar.

Finally, before we blit we must set up the memory form definition block for the screen. Make the call to `init_mfdb()` immediately after you open a virtual workstation to the screen. In C call `v_opnvwk()` to open a virtual workstation; in GFA BASIC 3.0 call `~V_OPNVWK(1)`.

And Now, The Main Event

You have seen how easy it is to use the blitter function to scroll an area of the screen. This month's main example program `SBLIT.PRG` loads a `DEGAS`-format picture into a buffer, and then opens a `GEM` window and blits the picture from the background buffer to the window on the screen. It demonstrates the use of the blitter in response to `GEM` messages for window drawing and redrawing.

Furthermore, it makes a good skeleton program for your own applications because it runs as either a desk accessory or a program, and it works properly on large-screen monitors. If `SBLIT` is run as a program, a menu item lets you select a background picture. Two are provided on disk, `SBLIT.P12` and `SBLIT.P13`.

If it is run as a desk accessory, holding down [Left Shift] while selecting its menu item will pop up an information box that will let you load a picture. Otherwise, it searches for the default picture file `SBLIT.P1x` in the root folder. To install `SBLIT` as a desk accessory, rename `SBLIT.PRG` to `SBLIT.ACC`, copy `SBLIT.ACC` to the root directory of your disk, then reboot your computer. Warning: The desk accessory version of `SBLIT` interferes with nonstandard `GEM` programs like `WordPerfect` and `Hotwire`.

(To find out more about writing applications that can be run as either programs or desk accessories, read my Programming In C column "Accessorize Your Programs" in the October 1989 issue of `START`.)

A Blitter Bonus!

Some Macintosh computers replace the corner Desk menu choice with a revolving globe. I decided to do something similar with the `SBLIT` program. If you run it as a program, the corner Atari icon will periodically spin 360 degrees. It's a neat effect, and it hints at the next installment of `Programming the Blitter`, which demonstrates animation within a `GEM` window. Until then, happy coding! ■

Samuel Streeper is an Atari network developer who lives in San Luis Obispo, Calif. He wrote the dual-purpose program/accessory lesson in the October 1989 issue of `START`.

5) stop: End of script.

Here is an example:

```
load bird0.3d2
```

```
load bird1.3d2
```

```
load bird2.3d2
```

```
40 frames
```

```
begin b:vly
```

```
doit
```

```
stop
```

Metamorph divides the frames between each set of key frames. This file creates an animation with 20 frames between each key frame. Alternately, the script could read:

```
load bird0.3d2
```

```
load bird1.3d2
```

```
20 frames
```

```
begin b:vly
```

```
doit
```

```
load bird1.3d2
```

```
load bird2.3d2
```

```
20 frames
```

```
doit
```

```
stop
```

The first script is faster; however, distortions sometimes appear when tweens are performed in sequence. These blemishes can be edited out using Cyber Paint, but you can avoid them altogether by using the more detailed script file.

Caveats

Metamorph needs 200K of RAM for itself, above and beyond the memory reserved by CAD-3D.

Metamorph has a limit of nine key frames, each no larger than 10K. Each key frame can contain multiple objects, up to CAD-3D's limit.

Aborting Metamorph requires you to hold down the spacebar until a dialog box appears asking if you wish to abort. A single keypress won't work due to CAD-3D's keyboard handler.

Set CAD-3D options – camera,

light, zoom, rendering – before using Metamorph. Also, only camera1 is implemented.

Metamorph uploads the object-color and color-group information for the first object in the list. So if you start CAD-3D and then Metamorph, you most likely will see a wireframe animation. Exit Metamorph and change the camera, zoom, and light settings to what you want.

Frame Changes

Objects must be consistent from key to key; you can't get an animation showing the transformation of a cube into a sphere. Each object in successive key frames must have the same number of faces and vertices, and the face assignments must be the same. Some Cyber Sculpt operations can change the face assignments so be cautious when distorting objects.

The interpolation algorithm used for Metamorph forces the animation to pass exactly through the key frames. This is handy for predicting how it will turn out, but the algorithm possibly can produce ringing or overshoot if the key-to-key differences are extreme. Usually such extreme changes aren't very realistic anyway; how many objects execute an abrupt right-angle turn?

Metamorph works best on animations that transform similar objects. For example, Metamorph can demonstrate how a tennis ball is flattened when it hits a wall. Or, use Metamorph to expand a two-dimensional automobile like a sponge, giving it width as well as length and height. ■

Mark Kimball is an electrical engineer who lives near Portland, Ore. This is his first program for START.

METAMORPHOSIS

continued from page 57

the Metamorph and Cyber Smash desk accessories installed, then loaded B1.3D2. This initialized the palette and allowed me to choose settings necessary to the finished animation. I double-clicked on SuperView and set the rendering to solid and final. Returning to the main workspace, I activated the Metamorph accessory.

A file selector appeared; I chose BIRD.CTL. Metamorph did the rest, taking about 30 minutes to create the 30 frames I wanted. (You can tell when Metamorph is working because the file box will remain in center screen.) When the box disappeared, the object from file B1.3D2 was still in the camera window, since it was the last key frame accessed by Metamorph.

Checking the directory I found two new files, BIRD.DLT and BIRD.PI1. If this was done in high resolution, I would have found a BIRD.PI3 file. These two files were needed for the animation. What had happened is that Metamorph generated the frames between the key frames, then sent them to CAD-3D, which created the delta and picture files.

Flying High

As far as Metamorph goes, its job was done. Running VROLAK.SEQ, however, you'll notice that the bat's wings flap three times and it flies towards you. The subsequent flaps were done using Cyber Paint's splice button, and the increasing bat size was achieved using its APM special effects.

I hope this example has given you some ideas on how to animate your own CAD-3D images. ■

Dave Stuart is a veteran computer animator and an Antic Software author. He lives in southern Oregon.



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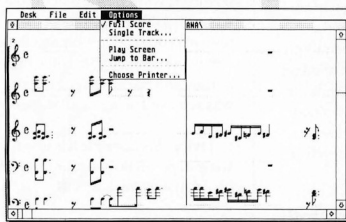
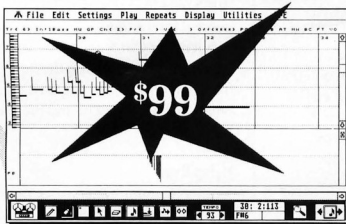
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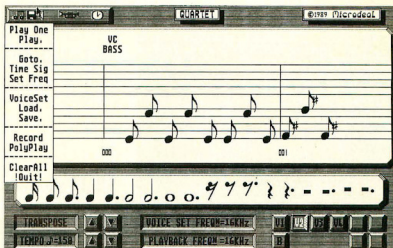
BY JIM PIERSON-PERRY

One of the most exciting new synthesizers these days is the Yamaha SY77, which integrates second-generation FM synthesis with sample playback. The first program for any computer to support it is Offspring For The SY77, from Command Development. This is a librarian and intelligent patch generation program (not a patch editor), using the "genetic" creation process featured in earlier releases for the M1 and D50 synths in the Offspring series.

Musicode announced an upgrade to their entire line of Voice Development System patch editors. The VDS 2.0 now supports up to four active banks simultaneously, copy/delete of parameter groups, generation of new patches from two parents and is compatible with the Soft Link multi-application manager. The integrated sequencer has also been updated to record/playback sysx data, load/save standard MIDI files and remap controllers. The latest addition to the line is VDS for the Yamaha V50.

Rounding out the patch editors is Synthworks Proteus from Steinberg/Jones, supporting both the original and new XR Proteus/1 models. Like other Synthworks editors, it

Song writing screen from Quartet, by Michtron/Microdeal.



features exceptionally strong graphical editing, a stand-alone patch library with database queries, integrated sequencer, on-line help and runs under the M-ROS multi-application manager.

Not a patch editor, but patch banks. That's what Sound Source Unlimited offers, in great abundance and on ST-compatible "Downloader" librarian disks. Multiple libraries are offered for the Yamaha DX7/DX7II/DX11, Roland D50/D10, Korg M1/M3r, Kawai K1/K4, Ensoniq VFX and E-mu Proteus families. I have tried several of these selections and am very pleased with their quality.

Quartet from Microdeal (distributed through MichTron), turns your ST into a four-voice

polyphonic sample playback system. It works along the lines of Music Studio; the difference is it uses digitized samples rather than playing the internal sound chip. You assign different samples (drums, synths, acoustic instruments, noise effects, etc.) to voices and write a song using standard music notation. Playback is through the ST monitor speaker, or the Replay D/A cartridge for better fidelity (no MIDI output). This program is capable of producing impressive music that can be integrated within your own software.

Synthesizer hardware manufacturers are starting to cross over into the software market. Korg Canada has released two sophisticated programs targeted at the high-end user. Multi is a "do all" sequencer with built-in

Disk Contents

Programs on Your START Disk



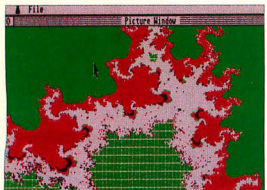
CARDMASTER PAGE 22

CARDMASTER By Susan D. Phillips..... **PAGE 22**

Pitch? Gin Rummy? Draw Poker? Acey Deucey? Name your game! Susan D. Phillips shuffles them all for you in her addictive jumbo pack, CardMaster. You've been warned, now deal the cards!

CARDMASTER BOOT FILES **PAGE 26**

CardMaster uses Atari's GDOS fonts to produce its superb visuals. In order for CardMaster to use GDOS, certain files must be present when you boot your computer. GDOS and its fonts are distributed on your START disk for use with CardMaster only. Install them and play away!



SBLIT PAGE 60

METAMORPH By Mark Kimball and Dave Stuart..... **PAGE 56**

The smoothest animations consist of hundreds of frames. Drawing them in a CAD program can be tedious, however. Now draw just two and let Metamorph fill in between them. Cyber stuff was never easier!

SBLIT By Samuel Streeper..... **PAGE 60**

The blitter functions offer the programmer a convenient way to move and manipulate graphic data. These functions are built into GEM on every ST, so this example program, demonstrating the use of the blitter for GEM window drawing and redrawing, works on every ST.

ST/ime \$59.95



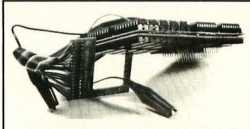
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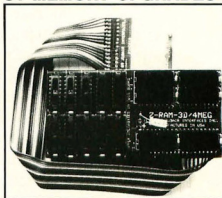
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Disk Instructions

HOW TO GET START PROGRAMS UP AND RUNNING

- 1) Write protect your disk.
- 2) Make a backup copy. We format the disk using TWISTER.PRG (written by Dave Small and Dan Moore, Summer 1988 issue of START) to increase the size of a single-sided disk to 400K. You can back up onto one Twisted, single-sided disk; one double-sided disk; or two GEM-formatted, single-sided disks.

NOTE: TWISTER DOES NOT WORK WITH GEM'S DISKCOPY.

To make a backup, open a window for your START disk, then drag the files from the window to the backup disk.

- 3) Store the original and use the backup hereafter.
- 4) Un-ARC the files. We use Double Click Software's DC SEA utility to create self-extracting archive files. To un-ARC a program, simply double click on the filename.

NOTE: IF YOU USE NEODESK'S ALTERNATE DESKTOP, DISABLE IT BEFORE UN-ARCING.

- 5) When the dialog box appears, choose Extract.
- 6) When the file selector appears, choose a destination disk (hard disk, RAM disk or floppy disk) for the uncompressed files. Make sure the destination disk has enough space for the uncompressed files, whose sizes are given in the chart below.

The screen goes blank, then the files are listed as they are extracted, and marked "OK" if the uncompression is successful.



	compatible not applicable	Artfile	Size	Memory				Notes
				512K	1MB	HIGH	LOW	
CardMaster		CARDGAME.PRG	305K	█	█	█	█	Needs data files in CARDBOOT.PRG
CardMaster Boot Files		CARDBOOT.PRG	57K	█	█	█	█	
Metamorph		MORPH.PRG	197K	█	█	█	█	Requires CAD-3D version 2.0
SBLIT		BLITTER1.PRG	120K	█	█	█	█	

COMING IN SEPTEMBER

To Celebrate (?) The Coming School Year, **START** Presents An Issue Especially For Kids! Some Highlights:

Kerry Whelan Surveys Educational Software Available For The ST

Kids And Computers—Programming Fun For All Ages!

Electronic Musician's Craig Anderton Reviews The Controversial Hotz Box From Atari

On Disk:

Kid Progs—Dorothy Brumleve's Animated Learning Adventure For Children Ages Two to Six

Anatomy — Explore The Fascinating Wonders Of The Human Body.

Intermediate Blitter — Samuel Streeper Continues His Guide To Programming

Quiz Wiz— Learning Doesn't Have To Be Boring

Plus Some Special Surprises!

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notation capabilities similar to Notator. It runs with a resolution of 796 ppqn and is compatible with the Atari laser printer for score output. Impact is a generic MIDI processing environment that you can configure to act as a generic patch/sample editor, mixer, light controller, etc. Each setup (e.g., MI editor) is a self-contained "console," and up to eight different consoles can be active on screen at the same time.

New for the bookshelf is *Power Sequencing with Master Tracks Pro/Pro 4* by Craig Anderton, musician, writer and founding editor of *Electronic Musician* magazine. Although geared to the Master Tracks program, the book contains much information and many useful tips that apply to working with any sequencer program. Highly recommended.

For those who haven't found out yet, virtually any book that deals with MIDI, music and related subjects can be found at the Mix Bookshelf (from the people who bring you *Electronic Musician* and *Mix* magazines). They also carry software, patch and sample libraries, videos and CDs. Check out their free catalog for more info.

MIDI For The Masses

As prices continue to drop on MIDI hardware, manufacturers are offering units aimed at the home-consumer market. Though low cost, many of these synths are quite impressive and offer abilities equal or beyond professional models of only a few years past. Some popular examples are the Roland MT-32, Yamaha TX8Z1 and Kawai PH50. These are (relatively) inexpensive enough that home users might consider them an

extension of the family stereo system. These are being used now for enhanced computer game soundtracks (e.g., Sierra On-Line). The growing availability of pre-recorded sequences fits well with such home MIDI systems. A proposed CD+MIDI format would let specially designed CD players send MIDI data to the home synth while playing the audio tracks.

Roland recently released three new synth modules aimed at home MIDI users. The multitimbral CM-32L module is based on LA synthesis, similar to the MT-32 but with double the onboard sounds. The CM-32P is a multitimbral sample playback unit which also accepts new sounds from ROM cards. Can't decide? No problem, the CM-64 combines both units in a single module for 63-voice polyphony across 15 multitimbral

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channels. Along with these is TenTracks, a companion ST software sequencer designed for novice users.

Veteran MIDI developer Passport Designs has expanded into the prerecorded sequence market and released the first set of 12 Music Data disks. Each disk holds three songs of a particular style (e.g., hits of the 50s, country, big band and classical), orchestrated for the MT-32 (although readily adaptable for other synths). The songs are in standard MIDI file format, compatible with virtually all sequencer programs. An expanded catalog with over 300 selections is expected before summer.

One of the slickest products I've seen in a while is the FM Melody Maker from Hybrid Arts. This combines a beginner sequencing program with an actual FM

synthesizer, supplied on a hardware cartridge unit, in one ideal starter package. Simply plug in the cartridge, connect it to your stereo, start up the sequencer and make music. The synth cartridge supports multitimbral play, (one melody plus four accompaniments, a bass and drums) with 78 hardwired melody sounds.

Bug Reports

They're not pretty, but they happen. Here is a rundown of some of the problems we have come across. The developers are all aware of these problems. First, neither the START Selector nor its popular shareware upgrade LGFSEL are compatible with Master Tracks Pro or Jr. UIS II/III work fine, as does the standard Atari file selector.

Cubase, and other M-ROS based software from Steinberg/Jones, now

works with GDOS and TOS 1.4 without a hitch but bombs with varying degrees of entertainment if used with PinHead, the shareware program—load accelerator.

Lastly, MIDI file importing is still a bit of an art form. Both Creator and Notator can have a problem if the incoming MIDI file uses a different time base from Creator's, and results in tracks being out of synch with each other. Dr. T's Tiger Cub occasionally runs into conflicts between the MIDI file and its own conductor track implementation. The file is imported correctly but with song length set to zero measures. Changing the song length manually corrects the problem. All of these problems have been reported to the developers. Corrections at least for the MIDI file bugs have been promised with upcoming releases.

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Intelligent Update

Intelligent Music has left the software market. Dr. T's has obtained distribution rights and technical support for IM's ST and other products, including M and RealTime. A planned maintenance update of RealTime (version 1.2) is still planned for this summer.

This news is of additional importance as Intelligent Music is the developer of the Atari MIDI-Tasking software. Plans are to continue full steam ahead with MIDI-Tasking. The change may benefit acceptance of MIDI-Tasking by other MIDI developers as it removes a potential conflict of interest from Intelligent Music's own products.

Staccato Notes

Passport has renamed their Master Tracks Jr. program to Trax and

dropped the price as well. Band-In-A-Box from PG Music, the intelligent accompaniment generator program, has been upgraded to version 2.1. No sooner do I recommend it, than *Music Technology* magazine folds. It's been incorporated into its sister magazine *Home and Studio Recording*.

The continuing Sonus saga rolls on. Software distribution and technical support for all of Sonus's products have been picked up by Sentech Electronics. SuperScore version 2, with bug fixes and support for the Atari laser printer, is due out any day.

Some great new products are on the horizon from Germany. These include updates to the powerhouse sequencers Cubase (version 2.0) and Notator (version 3.0), as well as junior versions of each - Cubeat

and Notator Alpha, respectively. C-Lab also plans a set of music and MIDI educational programs. No date yet on availability.

Also on the planning board is a collaborative project between Digidesign and C-Lab to integrate Creator/Notator with the recently introduced Sound Tools for the Atari. This move will let you combine digitized audio tracks (e.g., vocals, acoustic instrument, sound effects) with sequencer MIDI tracks all under one roof. A similar venture is ongoing in the Macintosh world between Digidesign and Opcode (with the Vision sequencer).

Finally, anyone interested in a public-domain MIDI file player can have a great one for the cost of a download. MIDIMOVR, a truncated version of Hybrid Arts' EditTrack sequencer, has been available on most BBSs for a while and loads/

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Offspring For The SY77, \$150. Command Development, 11846 Balboa Blvd., Suite 135, Granada Hills, CA 91344, 818/362-3550.

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M, \$199. **RealTime (version 1.11)**, \$349. **Tiger Cub**, \$99. Dr. T's Music Software, 220 Boylston St., Suite 306, Chestnut Hill, MA

02167, 617/244-6954.

Edit Track II, \$199. **FM Melody Maker**, \$149. Hybrid Arts, Inc., 8522 National Blvd., Culver City, CA 90232, 213/841-0340.

Multi, \$495. **Impact**, \$295. Korg Canada, 378 Rue Isabey, St. Laurent, Quebec, Canada H4T 1W1.

Quartet, \$59.95. MichTron, 576 S. Telegraph, Pontiac, MI 48053, 313/334-5700.

Mix Bookshelf, 6400 Hollis St., #12, Emeryville, CA 94608, 800/233-9604.

V50 Voice Development System (version 2.0), \$109. Musicode, 5575 Baltimore Drive, Suite 105-127, La Mesa, CA 92042, 619/469-7194.

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CM-32L, \$650. **CM-32P**, \$795. **CM-64**, Call for price. Roland Corp. U.S., 7200 Dominion Circle, Los Angeles, CA 30040, 213/685-5141.

SuperScore (version 2.0), Call for price. SenfTech Electronics, 21416 Chase St., Suite 1, Canoga Park, CA 91304, 818/709-4020.

Atari Downloader Disks, \$19.95-\$99.95. Sound Source Unlimited, 20825 1/2 Roscoe Blvd., Canoga Park, CA 91306, 800/877-4778.

Cubase (version 1.5), \$495. Steinberg/Jones, 17700 Raymer St., Suite 1001, Northridge, CA 91325, 818/993-4091.

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DC UTILITIES

REVIEWED BY DAVID PLOTKIN
START CONTRIBUTING EDITOR

AT A GLANCE

Product:	DC Utilities
Type:	Utility
Company:	Double Click Software P.O. Box 741206 Houston, TX 77274 (713) 645-3759
Price:	\$29.95
Summary:	These seven handy utilities will make your ST's life easier.

DC Squish
(version 1.1)
title screen.



Every so often a utility comes along that's so valuable you wonder how you ever got along without it. Double Click Software's DC Utilities is a package that includes seven (count 'em) such wonders.

DC Squish

DC Squish compresses executable programs, like .PRG, .TTP and accessories. What's amazing about it is that, unlike other ARC programs, its compressed files are executable. DC Squish is very simple to use. You can squish one file at a time or a batch of files at once. You can save your original file or write over it with the squished version. DC Squish also unsquishes files back to

their original form.

The extent to which DC Squish reduces a file size depends on how much repetitive code there is in the program. In tests I ran, some sample results were:

Program	Size Before	Size After	% CHG
Spectre	66052	52256	9
GFA BASIC 3.0	92760	77407	17
EasyDraw	146336	95816	35
CAD-3D 2.0	239537	131822	45

As you can see, the results vary, but even in the case of Spectre, 12K was saved. And CAD-3D was cut down by over 100K. One thing you need to be careful about are

programs that modify themselves when you configure them. (Many of the CodeHead programs do this.) You must set up the configuration before squishing, otherwise you'll destroy the file. If you need to modify the program again, you must unsquish it first.

DC Xtract

DC Xtract is one of the handiest programs for extracting ARC files (such as those on your START disk). First of all it's fast, four times as fast as ARCX. As a desk accessory, it's always available (and is compatible with Multidesk). To un-ARC a file, simply select DC Xtract, click on Xtract and choose a destination. If you use Universal Item Selector II,

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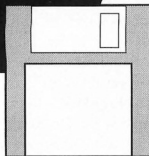
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you can even create a new folder (from the accessory) and un-ARC the files right into it.

DC Deskey

Next on the list is another desk accessory, DC Deskey. How many times have you wished that there were keyboard equivalents for menu items in the programs you run? For example, Word Writer does not have a keyboard equivalent for the Save menu. DC Deskey lets you define your own menu equivalent keyboard commands.

A series of simple steps is necessary to set up definitions. When you finish, save a data file with the keyboard definitions for any particular program to disk. DC Deskey automatically loads this data file when you run the program.

DC Deskey seems to work very well, even from shells such as Hotwire! or Maxifile. It does not work from within Multidesk and must be installed in its own accessory slot.

DC SEA

You may be familiar with the results of DC SEA; it's used on your START disk and in many public domain disks. This program takes an ARCed file and converts it into a self-extracting ARC (SEA) file. The resulting .PRG file is then placed on a disk. Double-click on the .PRG file to convert it back into usable form and extract the files that made up the ARCed file.

DC SEA is very simple to use. You just run it and select the .ARC file you want to convert. Unfortunately, the program does not both ARC and convert to SEA format; you must ARC the file first.

DC Desk Organizer

DC Desk Organizer lets you customize your desktop. To use it, you must first set up your various configurations and save the desktop

to a DESKTOP.INF file. (Rename that file so your next configuration doesn't just overwrite it.) When you have created all the .INF files you want, run DC Desk Organizer. It creates a .PRG file that sets up the desktop exactly as you specified in the .INF file. No muss, no fuss - DC Desk Organizer is very handy, especially for people who change resolutions on color monitors.

DC Ramit

DC Ramit lets you set up a RAM disk with any available drive. It includes something called an "image" button, which is supposed to save the entire contents of the RAM disk out to a floppy as a single file. The name of the image file can be saved in the configuration of the RAM disk, so that if you set up a RAM disk for bootup, it automatically loads the image file.

Unfortunately, I was never able to get the image file feature to work. Without this feature, DC Ramit is just another RAM disk and not reset-proof, at that. To be fair, Double Click Software couldn't duplicate my problem. Their version ran fine and the image file worked. It may well be some combination of my desk accessories and AUTO folder programs that caused the problem. Keep this in mind when you set it up in your computer.

The DC Utilities do come with a reset-proof RAM disk which must be placed in the AUTO folder, and can be configured in size and drive letter by the drive's icon on the Desktop.

Overall

DC Utilities are an outstanding buy, even with the RAM disk image file problem. The programs are not copy protected and customer support is excellent, both by phone and BBS. This package definitely has my recommendation. ■

HARD DISKS AND SPECTRE

BY CHRISTOPHER ROBERTS

The Spectre 128/GCR manual, though amusing, can be confusing and unclear in several areas. How to safely install Spectre partitions on your hard disk is one of them. To make things easier, here's a step-by-step example installation.

1. Back Up Your Hard Drive

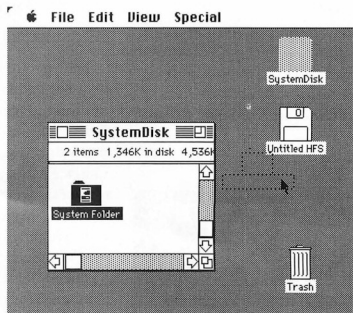
Back up all of the data that is on your hard disk. One of the best utilities for this is Turtle Backup, which can be found in the public domain on GEnie or CompuServe.

2. Establish Partition Sizes

Decide how much space on the hard disk you wish to dedicate to the Spectre. For the purposes of this tutorial, I'll assume that you have a 20MB hard drive or better and that you want to dedicate 10MB to the Spectre. (This is not an unreasonable amount when you consider that no Macintosh hard disk is under 20MB.)

Macintosh System files require considerable space to operate. To reduce confusion in the future, your first Spectre partition should contain your System files (System, Finder, printer drivers, etc.). This partition

On a spectre partition, the Macintosh Desktop appears as it normally does.



should be 2.5MB, because the System files are very large.

This will leave you with 7.5MB of free space. Now, divide this space into two equal-sized partitions of 3.75MB each. The standard 20MB hard-disk partition table, when formatted and partitioned in ST mode, will look like this:

C:5 D:5 E: 2.5 F: 3.75 G: 3.75

Note that due to a bug in GEM, the three Spectre partitions must be last on this particular hard-disk configuration. When GEM reads a hard disk's partition table and

encounters a partition without a GEM identification header, it stops looking for more GEM partitions.

You can't have a logical unit (individual hard-disk mechanism) with a GEM partition followed by a Spectre partition, followed by another GEM partition because the last GEM partition will disappear from the ST Desktop.

3. Format Your Hard Drive

Once you've backed up your hard-disk data to floppy and have decided your new partition sizes, it's time to format your hard disk. Atari, ICD and Supra provide partitioning and

formatting software for whatever drive you own.

If this is the first time you've ever formatted your hard disk, the three steps are:

A. Format the whole drive. This is done by telling the format program what kind of disk-drive controller, size and brand of drive mechanism you're using. All of this information is in your hard-disk manual.

B. Partition the drive. Partitioning is often part of the format program. It is a way to divide your hard disk into smaller disks. Note that TOS will not accept a partition larger than 16MB.

C. Install your hard-disk boot driver. This installation varies depending on the brand of software you use. ICD and Supra's boot software are very similar.

Both include a program that will

have a menu of choices labeled BOOT, MAP, etc. Click on BOOT, then select the C drive and install the boot driver.

Copy all your backed-up GEM programs to C and D only and recreate your DESKTOP.INF file.

Now you're ready to reformat your last three GEM partitions for the Spectre. Simply run the SPECTRExxx.PRG, drop down the HARD DISK menu and click on FORMAT.

SCSI stands for small computer special interface.

The Spectre software will ask you what SCSI address and LUN number you want to format. SCSI stands for small computer special interface (pronounced scuzzy). This is the interface format your ST host adapter converts the ST's DMA port to. Valid SCSI numbers are 0 to 7. If you have only one hard disk, the SCSI number will be 0.

The LUN is the logical unit number. This is the hard-disk mechanism that connects to the drive controller. Most drive controllers can handle two drive mechanisms. If you have a 20MB hard disk, you still may be able to connect a second mechanism of any size. LUN values are 0 or 1, LUN 1 being the second mechanism. With only one hard disk the LUN will be 0.

After setting the SCSI and LUN numbers, click on OK and the partition list will appear. The list will consist of partitions C through G. Click on the E partition and the format options will appear. Click on Format HFS. After formatting the E partition, continue with the same procedure on the F and G partitions.

Note that sometimes the hard-disk boot driver has to be re-installed. Repeat step C above to do this.

4. Install System Files On Your Spectre Partitions

Reboot your ST. Start the Spectre with a system floppy in the drive and the hard-disk option checked in the Spectre startup menu. The Automount option must be set to OFF (no check).

The Macintosh Desktop should appear as it normally does. Press [F3]. A disk icon named "Untitled HFS" should appear on the Desktop. Copy your system folder into the new disk by dragging it to this icon. With the copy of your system folder in your hard disk, you're ready to rename the "Untitled HFS" icon to whatever you want by clicking on the Icon once and typing the new name. Since this is your 2.5MB system disk, you might want to name it SystemDisk, as I did, to eliminate confusion.

Press [F4] then [F5] to get your other partition icons for renaming. After doing this, drag all your disk icons to the trash icon and turn off the computer. The function keys [F3] to [F5] have the same function as the [F1] and [F2] keys do with floppies. However, you will probably never use them except in installation.

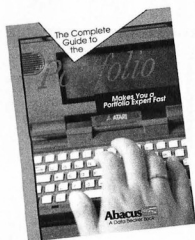
Restart your computer and run your SPECTRExxx.PRG. Now put checks by the Hard Disk and Automount options and go to the File Menu to save the settings. Start the Spectre without a system floppy in the drive and watch your hard disk load the System and Finder! ■

Christopher Roberts is a freelance writer and science-fiction novelist who lives in Havre, Mont.

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(Canada). **ReadySoft, 30 Wertheim Court, Unit 2, Richmond Hill, Ontario, Canada L4B 1B9, 416/731-4175.**

The Portable Portfolio

With new owners of Atari's Portfolio in mind, Abacus has published **The Complete Guide to the Portfolio**. The Guide walks you through the Portfolio's operating system and features, such as the calculator, worksheet, text editor, diary and address book. With a software and hardware overview as well as tips on memory management, this manual should never be far from the machine. **The Complete Guide to the Portfolio**, \$17.95. **Abacus, 5370 52nd St., SE, Grand Rapids, MI 49512, 616/698-0330.**

Desktop Publishing Guide

The Complete Guide to Desktop Publishing on the ST is 300 pages of reviews and tips on how to use the major desktop publishing packages for the ST. The Guide includes a comprehensive listing of all products mentioned. A disk containing sample fonts and design ideas will be bundled with the book. **The Complete Guide to Desktop Publishing With the Atari**, \$24.95. **Midsouth Marketing, 203 East Main St., Union, SC 29379, 803/427-2098.**

LAN For The ST

Lantech is now shipping its local area network for the ST. Through a cartridge port interface the Lantech LAN transfers data at speeds close to that of hard disk drives. On the Lantech LAN, every computer is a potential server - every hard disk partition, RAM disk partition, parallel printer and floppy disk can be configured for access by any other computer on the LAN. The Lantech LAN setup kit includes the manual, a configuration disk and two LT101 Lantech LAN cartridge interfaces. **Lantech LAN Setup Kit**, \$375.95. Additional LT101 cartridges, \$179.95. **Lantech Systems, P.O. Box R, Billerica, MA 01821, 508/667-9191.**

*If you have a new product for the ST, we'd like to hear from you. Please send press releases and product photos to **Products Update**, START Magazine, 544 Second Street, San Francisco, CA 94107*

Lucasfilm announces the release of its first fantasy adventure, **Loom**. Set in the age of Great Guilds, you take on the role of Bobbin, a young member of the mysterious Guild of Weavers. One night you find yourself suddenly alone in your village - the Elders have mysteriously disappeared. All you can do is search for clues. Stunning 3D graphics (drawn by award-winning fantasy artist Mark Ferrari), and panoramic scrolling promise to give Loom a distinctly cinematic look and realistic feel. **Loom**, \$59.95. **Lucasfilm Games, P.O. Box 2009, San Rafael, CA 94912, 415/662-1966.**

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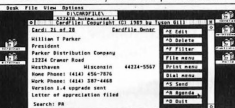
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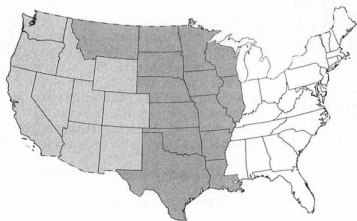
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